

## SEQUENCE LISTING

<110> Institut Pasteur, Monash University, University of Tennessee,  
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Stinear, Timoyhy P  
Cole, Stewart T  
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Small, Pamela LC  
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<120> THE MYCOLACTONE LOCUS: AN ASSEMBLY LINE FOR PRODUCING NOVEL  
POLYKETIDES, THERAPEUTIC AND PROPHYLACTIC USES

<130> D 22 869

<150> US 60/519 864

<151> 2003-11-14

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<170> PatentIn version 3.3

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<223> Nucleic acid sequence of the coding sequence of mlsA1 gene.

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<213> *Mycobacterium ulcerans*

<220>

<223> Nucleic acid sequence of the coding sequence of mlsA2 gene.

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<211> 42393

<212> DNA

<213> *Mycobacterium ulcerans*

<220>

<223> Nucleic acid sequence of the coding sequence of mlsB gene.

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&lt;210&gt; 4

&lt;211&gt; 987

&lt;212&gt; DNA

<213> *Mycobacterium ulcerans*

&lt;220&gt;

&lt;223&gt; Nucleic acid sequence of the coding sequence of mup045 gene.

&lt;400&gt; 4

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987

&lt;210&gt; 5

&lt;211&gt; 1314

&lt;212&gt; DNA

<213> *Mycobacterium ulcerans*

&lt;220&gt;

&lt;223&gt; Nucleic acid sequence of the coding sequence of mup053 gene.

&lt;400&gt; 5

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gatacgcccc atctgctgct gccgcgctcg ttgctggccg ttgagccgcc gaatcacacg 360  
cgctatcgca aggcagtgtc ctcggtgttc acgccgaaag cagtagccgg attacgcgat 420  
catgtcgaag agactgcgtc ggcgctgttg gatcagctca ccgaccaggc tagtgccgtc 480  
gacatcatag ccgctactg ctcccagctg ccggtcgcgg tcatttgtga catcttaggc 540  
gtgcccagtc gagaccgaaa ccgtgttctc aagttcggtc agctggcggg gccctgcttg 600  
gattttgggc tcacatggcg tcagcaccag caggtagcggc aagggtcca aggactccac 660  
ttctggatca ccgagcacct cgaggaattg cgggtctaacc ccggtgacga tctgatgagt 720  
caaatgatcc acgcaagtga aaatggctcc tcggaaacac acctccacgc aaccgaagtg 780  
cggatgatcg ggctgggtgtt gggcgccagt ttcgcaacaa cgatggacct gttaggcaac 840  
gggattcagg tggtgttgga cgcgccgaa ctgcgggacg cgttgagtca gcgcccgcaa 900  
ctttggcca acgcggtaga agagatcctg cggttggagc caccggttca gctcgccgga 960  
cgaatggctc gcaaggacac cgaggtggcg ggtaccgcaa tcaagcgggg ccagctggtg 1020  
gcatctatc tgggggcggt caaccgtgat ccgtccgtgt tcgccgatcc gcaccgcttt 1080  
gacatcacac gagccaacgc caaccggcat ctgcattct ccggtggccg ccacttctgc 1140  
ctcggtgccg cccttgcccc cgtcgaaggc gaagtcggat tgagaatgct cttcgagcgc 1200  
ttccctgacg tgcgcgccgc aggccccgga aatagacgtg atactcgaac tctgcggggt 1260  
tggtcgcagc tgccgggtcca gttgggcgca gcacgatcga tggctatccg atga 1314

&lt;210&gt; 6

&lt;211&gt; 906

&lt;212&gt; DNA

<213> *Mycobacterium ulcerans*

&lt;220&gt;

&lt;223&gt; Nucleic acid sequence of the coding sequence of mup038 gene.

&lt;400&gt; 6

```
atgattgttt ggcccgaagt ggtcagcaca gtggtcgacg tcgatggcgt ggcgatgtcg      60
gcactagtcg ccgaacccga tcaggagcct aaggccgtga tcttagccct gcatggcggt      120
gccaccaacg cgcggtatct cgactgccct ggccaccgag cgctttccct gctgcacacc      180
ggcgcggcgg cgggattcac cgttggtggc cttgaccggc ccggctacgg cagctcggcg      240
ggtgatcccg acgcgatgaa ccggccccac cagcggggcg cgctggccta tggggcgctg      300
gatcgcatcc tggcgcagcg gccacgcggg gccgggggtgt tcataatggg ccattcaaac      360
ggatgcgaac tggcgatgtg gatggccacc gagacgcgag gtgccgagct gctcggcata      420
gagttggctg gtaccggctg gcattatcag cccgaggccc gagaaatcct gacaacggcc      480
actggtgaac atcgggtgggt gggcctctat gatttgctct ggcatccgca gcggctatac      540
ccgcccagag tctcaacgc ggccatcatt tcttcgtccg ccccggccta cgaggagcag      600
atgatggccg actggacccg ccgaaccttc ctggagctag tccctgctgt gcgtgtgccg      660
gtacatttca gcatcgccca acacgaaaag gtttggcagc gcgatagttc agcgctagat      720
gaaatcgccg tctgtttctc tggcgcgccg cggttcatcc tgcataaaca acccgaggcc      780
ggacacaaca tcagcctggg ccacaccgcc ggcgactacc acacgacagt cctgtcgttt      840
gtccagcaat gtctggccga acggttggcc aacgcgcaac aagatgtcga tctcgcggcc      900
gagtga                                           906
```

&lt;210&gt; 7

&lt;211&gt; 16990

&lt;212&gt; PRT

<213> *Mycobacterium ulcerans*

&lt;220&gt;

&lt;223&gt; Amino acid sequence of the protein encoded by mlsA1 gene.

&lt;400&gt; 7

```
Val Ile Phe Gly Asp Ala His Gln Asn Cys Arg Gly Gly Arg Val Leu
1           5           10          15

Gly Asp Ala Val Ala Val Val Gly Met Ser Cys Arg Val Pro Gly Ala
          20          25          30

Ser Asp Pro Asp Ala Leu Trp Ala Leu Leu Arg Asp Gly Ile Ser Val
          35          40          45
```

Val Asp Glu Ile Pro Ser Ala Arg Trp Asn Leu Asp Gly Leu Val Ala  
 50 55 60

His Arg Leu Thr Asp Glu Gln Arg Ser Ala Leu Arg His Gly Ala Phe  
 65 70 75 80

Leu Asp Asp Val Glu Gly Phe Asp Ala Ala Phe Phe Gly Ile Asn Pro  
 85 90 95

Ser Glu Ala Gly Ser Met Asp Pro Gln Gln Arg Leu Met Leu Glu Leu  
 100 105 110

Thr Trp Ala Ala Leu Glu Asp Ala Arg Ile Val Pro Glu His Leu Ser  
 115 120 125

Gly Ser Ser Ser Gly Val Phe Thr Gly Ala Met Ser Asp Asp Tyr Thr  
 130 135 140

Thr Ala Val Thr Tyr Arg Ala Ala Met Thr Ala His Thr Phe Ala Gly  
 145 150 155 160

Thr His Arg Ser Leu Ile Ala Asn Arg Val Ser Tyr Thr Leu Gly Leu  
 165 170 175

Arg Gly Pro Ser Leu Val Ile Asp Thr Gly Gln Ser Ser Ser Leu Val  
 180 185 190

Ala Val His Val Ala Met Glu Ser Leu Arg Arg Glu Glu Thr Ser Leu  
 195 200 205

Ala Ile Ala Gly Gly Ile His Leu Asn Leu Ser Leu Ala Ala Ala Leu  
 210 215 220

Ser Ala Ala His Phe Gly Ala Leu Ser Pro Asp Gly Arg Cys Tyr Thr  
 225 230 235 240

Phe Asp Ala Arg Ala Asn Gly Tyr Val Arg Gly Glu Gly Gly Gly Val  
 245 250 255

Val Val Leu Lys Arg Leu Asn Asp Ala Leu Ala Asp Gly Asn His Ile  
 260 265 270

Tyr Cys Val Ile Arg Gly Ser Ser Val Asn Asn Asp Gly Ala Thr Gln  
 275 280 285

Asp Leu Thr Ala Pro Gly Val Asp Gly Gln Arg Gln Ala Leu Leu Gln  
290 295 300

Ala Tyr Glu Arg Ala Glu Ile Asp Pro Ser Glu Val Gln Tyr Val Glu  
305 310 315 320

Leu His Gly Thr Gly Thr Arg Leu Gly Asp Pro Thr Glu Ala His Ser  
325 330 335

Leu His Ser Val Phe Gly Thr Ser Thr Val Pro Arg Ser Pro Leu Leu  
340 345 350

Val Gly Ser Ile Lys Thr Asn Ile Gly His Leu Glu Gly Ala Ala Gly  
355 360 365

Ile Leu Gly Leu Ile Lys Thr Ala Leu Ala Val His His Arg Gln Leu  
370 375 380

Pro Pro Ser Leu Asn Tyr Thr Val Pro Asn Pro Lys Ile Pro Leu Glu  
385 390 395 400

Gln Leu Gly Leu Arg Val Gln Thr Thr Leu Ser Glu Trp Pro Asp Leu  
405 410 415

Asp Lys Pro Leu Thr Ala Gly Val Ser Ser Phe Ser Met Gly Gly Thr  
420 425 430

Asn Ala His Leu Ile Leu Gln Gln Pro Pro Thr Pro Asp Thr Thr Gln  
435 440 445

Thr Pro Asn Pro Thr Thr Gly Ser Asp Pro Ala Val Gly Ser Asp Pro  
450 455 460

Ala Val Gly Val Leu Val Trp Pro Leu Ser Ala Arg Ser Ala Pro Gly  
465 470 475 480

Leu Ser Ala Gln Ala Ala Arg Leu Tyr Gln His Leu Ser Ala His Pro  
485 490 495

Asp Leu Asp Pro Ile Asp Val Ala His Ser Leu Ala Thr Thr Arg Ser  
500 505 510

His His Pro His Arg Ala Thr Ile Thr Thr Ser Ile Glu His His Ser  
515 520 525

Glu Asn Asn His Asp Thr Thr Asp Ala Leu Ala Ala Leu His Ala Leu  
 530 535 540

Ala Asn Asn Gly Thr His Pro Leu Leu Ser Arg Gly Leu Leu Thr Pro  
 545 550 555 560

Gln Gly Pro Gly Lys Thr Val Phe Val Phe Pro Gly Gln Gly Ser Gln  
 565 570 575

Tyr Pro Gly Met Gly Ala Asp Leu Tyr Arg Gln Phe Pro Val Phe Ala  
 580 585 590

His Ala Leu Asp Glu Val Ala Ala Ala Leu Asn Pro His Leu Asp Val  
 595 600 605

Ala Leu Leu Glu Val Met Phe Ser Gln Gln Asp Thr Ala Met Ala Gln  
 610 615 620

Leu Leu Asp Gln Thr Phe Tyr Ala Gln Pro Ala Leu Phe Ala Leu Gly  
 625 630 635 640

Thr Ala Leu His Arg Leu Phe Thr His Ala Gly Ile His Pro Asp Tyr  
 645 650 655

Leu Leu Gly His Ser Ile Gly Glu Leu Thr Ala Ala Tyr Ala Ala Gly  
 660 665 670

Val Leu Ser Leu Gln Asp Ala Ala Thr Leu Val Thr Ser Arg Gly Arg  
 675 680 685

Leu Met Gln Ser Cys Thr Pro Gly Gly Thr Met Leu Ala Leu Gln Ala  
 690 695 700

Ser Glu Ala Glu Val Gln Pro Leu Leu Glu Gly Leu Asp His Ala Val  
 705 710 715 720

Ser Ile Ala Ala Ile Asn Gly Ala Thr Ser Ile Val Leu Ser Gly Asp  
 725 730 735

His Asp Ser Leu Glu Gln Ile Gly Glu His Phe Ile Thr Gln Asp Arg  
 740 745 750

Arg Thr Thr Arg Leu Gln Val Ser His Ala Phe His Ser Pro His Met  
 755 760 765

Asp Pro Ile Leu Glu Gln Phe Arg Gln Ile Ala Ala Gln Leu Thr Phe

770

775

780

Ser Ala Pro Thr Leu Pro Ile Leu Ser Asn Leu Thr Gly Gln Ile Ala  
785 790 795 800

Arg His Asp Gln Leu Ala Ser Pro Asp Tyr Trp Thr Gln Gln Leu Arg  
805 810 815

Asn Thr Val Arg Phe His Asp Thr Val Ala Ala Leu Leu Gly Ala Gly  
820 825 830

Glu Gln Val Phe Leu Glu Leu Ser Pro His Pro Val Leu Thr Gln Ala  
835 840 845

Ile Thr Asp Thr Val Glu Gln Ala Gly Gly Gly Gly Ala Ala Val Pro  
850 855 860

Ala Leu Arg Lys Asp Arg Pro Asp Ala Val Ala Phe Ala Ala Ala Leu  
865 870 875 880

Gly Gln Leu His Cys His Gly Ile Ser Pro Ser Trp Asn Val Leu Tyr  
885 890 895

Cys Gln Ala Arg Pro Leu Thr Leu Pro Thr Tyr Ala Phe Gln His Gln  
900 905 910

Arg Tyr Trp Leu Leu Pro Thr Ala Gly Asp Phe Ser Gly Ala Asn Thr  
915 920 925

His Ala Met His Pro Leu Leu Asp Thr Ala Thr Glu Leu Ala Glu Asn  
930 935 940

Arg Gly Trp Val Phe Thr Gly Arg Ile Ser Pro Arg Thr Gln Pro Trp  
945 950 955 960

Leu Asn Glu His Ala Val Glu Ser Ala Val Leu Phe Pro Asn Thr Gly  
965 970 975

Phe Val Glu Leu Ala Leu His Val Ala Asp Arg Ala Gly Tyr Ser Ser  
980 985 990

Val Asn Glu Leu Ile Val His Thr Pro Leu Leu Leu Ala Gly His Asp  
995 1000 1005

Thr Ala Asp Leu Gln Ile Thr Val Thr Asp Thr Asp Asp Met Gly

1010		1015		1020
Arg Gln Ser Leu Asn Ile His	Ser His Pro His Ile Gly His Asp			
1025	1030	1035		
Asn Thr Thr Thr Gly Asp Glu	Gln Pro Glu Trp Val Leu His Ala			
1040	1045	1050		
Ser Ala Val Leu Thr Ala Gln	Thr Thr Asp His Asn His Leu Pro			
1055	1060	1065		
Leu Thr Pro Val Pro Trp Pro	Pro Pro Gly Thr Ala Ala Ile Glu			
1070	1075	1080		
Val Asp Asp Phe Tyr Asp Asp	Leu Ala Ala Gln Gly Tyr Asn Tyr			
1085	1090	1095		
Gly Pro Thr Phe Gln Gly Val	Gln Arg Ile Trp Arg Asp His Ala			
1100	1105	1110		
Thr Pro Asp Val Ile Tyr Ala	Glu Val Glu Leu Pro Glu Asp Thr			
1115	1120	1125		
Asp Ile Asp Gly Tyr Gly Ile	His Pro Ala Leu Phe Asp Ala Ala			
1130	1135	1140		
Leu His Pro Leu Leu Ala Leu	Thr Gln Pro Pro Thr Asn Asp Thr			
1145	1150	1155		
Asp Asp Thr Asn Thr Ala Asp	Thr Gly Asp Gln Val Arg Leu Pro			
1160	1165	1170		
Tyr Ala Phe Thr Gly Ile Ser	Leu His Ala Thr His Ala Thr Arg			
1175	1180	1185		
Leu Arg Val Arg Leu Thr Arg	Thr Gly Ala Asp Ala Ile Thr Val			
1190	1195	1200		
His Thr Ser Asp Thr Thr Gly	Ala Pro Val Ala Ile Ile Asp Ser			
1205	1210	1215		
Leu Ile Thr Arg Pro Leu Thr	Thr Ala Thr Gly Ser Ala Pro Ala			
1220	1225	1230		
Thr Thr Ala Ala Gly Leu Leu	His Leu Ser Trp Pro Pro His Pro			



1235

1240

1245

Asp Thr Thr Thr Asp Thr Asp Thr Asp Thr Asp Ala Leu Arg Tyr  
 1250 1255 1260

Gln Val Ile Ala Glu Pro Thr Gln Gln Leu Pro Arg Tyr Leu His  
 1265 1270 1275

Asp Leu His Thr Ser Thr Asp Leu His Thr Ser Thr Thr Glu Ala  
 1280 1285 1290

Asp Val Val Val Trp Pro Val Pro Val Pro Ser Asn Glu Glu Leu  
 1295 1300 1305

Gln Ala His Gln Ala Ser Asp Thr Ala Val Ser Ser Arg Ile His  
 1310 1315 1320

Thr Leu Thr Arg Gln Thr Leu Thr Val Val Gln Asp Trp Leu Thr  
 1325 1330 1335

His Pro Asp Thr Thr Gly Thr Arg Leu Val Ile Val Thr Arg His  
 1340 1345 1350

Gly Val Ser Thr Ser Ala His Asp Pro Val Pro Asp Leu Ala His  
 1355 1360 1365

Ala Ala Val Trp Gly Leu Ile Arg Ser Ala Gln Asn Glu His Pro  
 1370 1375 1380

Gly Arg Phe Thr Leu Leu Asp Thr Asp Asp Asn Thr Asn Ser Asp  
 1385 1390 1395

Thr Leu Thr Thr Ala Leu Thr Leu Pro Thr Arg Glu Asn Gln Leu  
 1400 1405 1410

Ala Ile Arg Arg Asp Thr Ile His Ile Pro Arg Leu Thr Arg His  
 1415 1420 1425

Ser Ser Asp Gly Ala Leu Thr Ala Pro Val Val Val Asp Pro Glu  
 1430 1435 1440

Gly Thr Val Leu Ile Thr Gly Gly Thr Gly Thr Leu Gly Ala Leu  
 1445 1450 1455

Phe Ala Glu His Leu Val Ser Ala His Gly Val Arg His Leu Leu

1460		1465		1470
Leu Thr Ser Arg Arg Gly Pro Gln Ala His Gly Ala Thr Asp Leu				
1475		1480		1485
Gln Gln Arg Leu Thr Asp Leu Gly Ala His Val Thr Ile Thr Ala				
1490		1495		1500
Cys Asp Ile Ser Asp Pro Glu Ala Leu Ala Ala Leu Val Asn Ser				
1505		1510		1515
Val Pro Thr Gln His Arg Leu Thr Ala Val Val His Thr Ala Ala				
1520		1525		1530
Val Leu Ala Asp Thr Pro Val Thr Glu Leu Thr Gly Asp Gln Leu				
1535		1540		1545
Asp Gln Val Leu Ala Pro Lys Ile Asp Ala Ala Trp Gln Leu His				
1550		1555		1560
Gln Leu Thr Tyr Glu His Asn Leu Ser Ala Phe Ile Met Phe Ser				
1565		1570		1575
Ser Met Ala Gly Met Ile Gly Ser Pro Gly Gln Gly Asn Tyr Ala				
1580		1585		1590
Ala Ala Asn Thr Ala Leu Asp Ala Leu Ala Asp Tyr Arg His Arg				
1595		1600		1605
Leu Gly Leu Pro Ala Thr Ser Leu Ala Trp Gly Tyr Trp Gln Thr				
1610		1615		1620
His Thr Gly Leu Thr Ala His Leu Thr Asp Val Asp Leu Ala Arg				
1625		1630		1635
Met Thr Arg Leu Gly Leu Met Pro Ile Ala Thr Ser His Gly Leu				
1640		1645		1650
Ala Leu Phe Asp Ala Ala Leu Ala Thr Gly Gln Pro Val Ser Ile				
1655		1660		1665
Pro Ala Pro Ile Asn Thr His Thr Leu Ala Arg His Ala Arg Asp				
1670		1675		1680
Asn Thr Leu Ala Pro Ile Leu Ser Ala Leu Ile Thr Thr Pro Arg				
1685		1690		1695

Arg	Arg	Ala	Ala	Ser	Ala	Ala	Thr	Asp	Leu	Ala	Ala	Arg	Leu	Asn
1700						1705					1710			
Gly	Leu	Ser	Pro	Gln	Gln	Gln	Gln	Gln	Thr	Leu	Ala	Thr	Leu	Val
1715						1720					1725			
Ala	Ala	Ala	Thr	Ala	Thr	Val	Leu	Gly	His	His	Thr	Pro	Glu	Ser
1730						1735					1740			
Ile	Ser	Pro	Ala	Thr	Ala	Phe	Lys	Asp	Leu	Gly	Ile	Asp	Ser	Leu
1745						1750					1755			
Thr	Ala	Leu	Glu	Leu	Arg	Asn	Thr	Leu	Thr	His	Asn	Thr	Gly	Leu
1760						1765					1770			
Asn	Leu	Ser	Ser	Thr	Leu	Ile	Phe	Asp	His	Pro	Thr	Pro	His	Ala
1775						1780					1785			
Val	Ala	Glu	His	Leu	Leu	Glu	Gln	Ile	Pro	Gly	Ile	Gly	Ala	Leu
1790						1795					1800			
Val	Pro	Ala	Pro	Val	Val	Ile	Ala	Ala	Gly	Arg	Thr	Glu	Glu	Pro
1805						1810					1815			
Val	Ala	Val	Val	Gly	Met	Ala	Cys	Arg	Phe	Pro	Gly	Gly	Val	Ala
1820						1825					1830			
Ser	Ala	Asp	Gln	Leu	Trp	Asp	Leu	Val	Ile	Ala	Gly	Arg	Asp	Val
1835						1840					1845			
Val	Gly	Asn	Phe	Pro	Ala	Asp	Arg	Gly	Trp	Asp	Val	Glu	Gly	Leu
1850						1855					1860			
Phe	Asp	Pro	Asp	Pro	Asp	Ala	Val	Gly	Lys	Thr	Tyr	Thr	Arg	Tyr
1865						1870					1875			
Gly	Ala	Phe	Leu	Asp	Asp	Ala	Ala	Gly	Phe	Asp	Ala	Gly	Phe	Phe
1880						1885					1890			
Gly	Ile	Ser	Pro	Arg	Glu	Ala	Arg	Ala	Met	Asp	Pro	Gln	Gln	Arg
1895						1900					1905			
Leu	Leu	Leu	Glu	Val	Cys	Trp	Glu	Ala	Leu	Glu	Thr	Ala	Gly	Ile
1910						1915					1920			

Pro	Ala	His	Thr	Leu	Ala	Gly	Thr	Ser	Thr	Gly	Val	Phe	Val	Gly
1925						1930					1935			
Ala	Trp	Ala	Gln	Ser	Tyr	Gly	Ala	Thr	Asn	Ser	Asp	Asp	Ala	Glu
1940						1945					1950			
Gly	Tyr	Ala	Met	Thr	Gly	Gly	Ala	Thr	Ser	Val	Met	Ser	Gly	Arg
1955						1960					1965			
Ile	Ala	Tyr	Thr	Leu	Gly	Leu	Glu	Gly	Pro	Ala	Ile	Thr	Val	Asp
1970						1975					1980			
Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Ile	His	Leu	Ala	Cys	Gln
1985						1990					1995			
Ser	Leu	Arg	Asn	Asn	Glu	Ser	Gln	Leu	Ala	Leu	Ala	Gly	Gly	Val
2000						2005					2010			
Thr	Val	Met	Ser	Thr	Pro	Ala	Val	Phe	Thr	Asp	Phe	Ser	Arg	Gln
2015						2020					2025			
Arg	Gly	Leu	Ala	Pro	Asp	Gly	Arg	Cys	Lys	Ala	Phe	Ala	Ala	Thr
2030						2035					2040			
Ala	Asp	Gly	Thr	Gly	Trp	Gly	Glu	Gly	Ala	Ala	Val	Leu	Val	Leu
2045						2050					2055			
Glu	Arg	Leu	Ser	Glu	Ala	Arg	Arg	Asn	Asn	His	Pro	Val	Leu	Ala
2060						2065					2070			
Ile	Val	Ala	Gly	Ser	Ala	Ile	Asn	Gln	Asp	Gly	Ala	Ser	Asn	Gly
2075						2080					2085			
Leu	Thr	Ala	Pro	His	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	Asn	Gln
2090						2095					2100			
Ala	Leu	Ala	Asn	Ala	Gly	Leu	Thr	His	Asp	Gln	Val	Asp	Ala	Val
2105						2110					2115			
Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu	Ala
2120						2125					2130			
Gly	Ala	Leu	His	Ala	Thr	Tyr	Gly	His	His	His	Thr	Pro	Asp	Gln
2135						2140					2145			

Pro	Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile	Gly	His	Thr	Gln
2150						2155					2160			
Ala	Ala	Ala	Gly	Ala	Ala	Gly	Val	Val	Lys	Met	Ile	Gln	Ala	Ile
2165						2170					2175			
Thr	His	Ala	Thr	Leu	Pro	Ala	Thr	Leu	His	Val	Asp	Gln	Pro	Ser
2180						2185					2190			
Pro	His	Ile	Asp	Trp	Ser	Ser	Gly	Thr	Val	Arg	Leu	Leu	Thr	Glu
2195						2200					2205			
Pro	Ile	Gln	Trp	Pro	Asn	Thr	Asp	His	Pro	Arg	Thr	Ala	Ala	Val
2210						2215					2220			
Ser	Ser	Phe	Gly	Ile	Ser	Gly	Thr	Asn	Ala	His	Leu	Ile	Leu	Gln
2225						2230					2235			
Gln	Pro	Pro	Thr	Pro	Asp	Thr	Thr	Gln	Thr	Pro	Asn	Pro	Thr	Thr
2240						2245					2250			
Gly	Ser	Asp	Pro	Ala	Val	Gly	Ser	Asp	Ser	Ala	Val	Gly	Ser	Asp
2255						2260					2265			
Pro	Ala	Val	Gly	Val	Leu	Val	Trp	Pro	Leu	Ser	Ala	Arg	Ser	Ala
2270						2275					2280			
Pro	Gly	Leu	Ser	Ala	Gln	Ala	Ala	Arg	Leu	Tyr	Gln	His	Leu	Ser
2285						2290					2295			
Ala	His	Pro	Asp	Leu	Asp	Pro	Ile	Asp	Val	Ala	His	Ser	Leu	Ala
2300						2305					2310			
Thr	Thr	Arg	Ser	His	His	Pro	His	Arg	Ala	Thr	Ile	Thr	Thr	Ser
2315						2320					2325			
Ile	Glu	His	His	Ser	Glu	Asn	Asn	His	Asp	Thr	Thr	Asp	Ala	Leu
2330						2335					2340			
Ala	Ala	Leu	His	Ala	Leu	Ala	Asn	Asn	Gly	Thr	His	Pro	Leu	Leu
2345						2350					2355			
Ser	Arg	Gly	Leu	Leu	Thr	Pro	Gln	Gly	Pro	Gly	Lys	Thr	Val	Phe
2360						2365					2370			

Val	Phe	Pro	Gly	Gln	Gly	Ser	Gln	Tyr	Pro	Gly	Met	Gly	Ala	Asp
2375						2380					2385			
Leu	Tyr	Arg	Gln	Phe	Pro	Val	Phe	Ala	His	Ala	Leu	Asp	Glu	Val
2390						2395					2400			
Ala	Ala	Ala	Leu	Asn	Pro	His	Leu	Asp	Val	Ala	Leu	Leu	Glu	Val
2405						2410					2415			
Met	Phe	Ser	Gln	Gln	Asp	Thr	Ala	Met	Ala	Gln	Leu	Leu	Asp	Gln
2420						2425					2430			
Thr	Phe	Tyr	Ala	Gln	Pro	Ala	Leu	Phe	Ala	Leu	Gly	Thr	Ala	Leu
2435						2440					2445			
His	Arg	Leu	Phe	Thr	His	Ala	Gly	Ile	His	Pro	Asp	Tyr	Leu	Leu
2450						2455					2460			
Gly	His	Ser	Ile	Gly	Glu	Leu	Thr	Ala	Ala	Tyr	Ala	Ala	Gly	Val
2465						2470					2475			
Leu	Ser	Leu	Gln	Asp	Ala	Ala	Thr	Leu	Val	Thr	Ser	Arg	Gly	Arg
2480						2485					2490			
Leu	Met	Gln	Ser	Cys	Thr	Pro	Gly	Gly	Thr	Met	Leu	Ala	Leu	Gln
2495						2500					2505			
Ala	Ser	Glu	Ala	Glu	Val	Gln	Pro	Leu	Leu	Glu	Gly	Leu	Asp	His
2510						2515					2520			
Ala	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Ala	Thr	Ser	Ile	Val	Leu
2525						2530					2535			
Ser	Gly	Asp	His	Asp	Ser	Leu	Glu	Gln	Ile	Gly	Glu	His	Phe	Ile
2540						2545					2550			
Thr	Gln	Asp	Arg	Arg	Thr	Thr	Arg	Leu	Gln	Val	Ser	His	Ala	Phe
2555						2560					2565			
His	Ser	Pro	His	Met	Asp	Pro	Ile	Leu	Glu	Gln	Phe	Arg	Gln	Ile
2570						2575					2580			
Ala	Ala	Gln	Leu	Thr	Phe	Ser	Ala	Pro	Thr	Leu	Pro	Ile	Leu	Ser
2585						2590					2595			
Asn	Leu	Thr	Gly	Gln	Ile	Ala	Arg	His	Asp	Gln	Leu	Ala	Ser	Pro

2600		2605		2610
Asp Tyr Trp Thr Gln Gln Leu Arg Asn Thr Val Arg Phe His Asp				
2615		2620		2625
Thr Val Ala Ala Leu Leu Gly Ala Gly Glu Gln Val Phe Leu Glu				
2630		2635		2640
Leu Ser Pro His Pro Val Leu Thr Gln Ala Ile Thr Asp Thr Val				
2645		2650		2655
Glu Gln Ala Gly Gly Gly Gly Ala Ala Val Pro Ala Leu Arg Lys				
2660		2665		2670
Asp Arg Pro Asp Ala Val Ala Phe Ala Ala Ala Leu Gly Gln Leu				
2675		2680		2685
His Cys His Gly Ile Ser Pro Ser Trp Asn Val Leu Tyr Cys Gln				
2690		2695		2700
Ala Arg Pro Leu Thr Leu Pro Thr Tyr Ala Phe Gln His Gln Arg				
2705		2710		2715
Tyr Trp Leu Leu Pro Thr Ala Gly Asp Phe Ser Gly Ala Asn Thr				
2720		2725		2730
His Ala Met His Pro Leu Leu Asp Thr Ala Thr Glu Leu Ala Glu				
2735		2740		2745
Asn Arg Gly Trp Val Phe Thr Gly Arg Ile Ser Pro Arg Thr Gln				
2750		2755		2760
Pro Trp Leu Asn Glu His Ala Val Glu Ser Ala Val Leu Phe Pro				
2765		2770		2775
Asn Thr Gly Phe Val Glu Leu Ala Leu His Val Ala Asp Arg Ala				
2780		2785		2790
Gly Tyr Ser Ser Val Asn Glu Leu Ile Val His Thr Pro Leu Leu				
2795		2800		2805
Leu Ala Gly His Asp Thr Ala Asp Leu Gln Ile Thr Val Thr Asp				
2810		2815		2820
Thr Asp Asp Met Gly Arg Gln Ser Leu Asn Ile His Ser Arg Pro				
2825		2830		2835

His	Ile	Gly	His	Asp	Asn	Thr	Thr	Thr	Gly	Asp	Glu	Gln	Pro	Glu
2840						2845					2850			
Trp	Val	Leu	His	Ala	Ser	Ala	Val	Leu	Thr	Ala	Gln	Thr	Thr	Asp
2855						2860					2865			
His	Asn	His	Leu	Pro	Leu	Thr	Pro	Val	Pro	Trp	Pro	Pro	Pro	Gly
2870						2875					2880			
Thr	Ala	Ala	Ile	Glu	Val	Asp	Asp	Phe	Tyr	Asp	Asp	Leu	Ala	Ala
2885						2890					2895			
Gln	Gly	Tyr	Asn	Tyr	Gly	Pro	Thr	Phe	Gln	Gly	Val	Gln	Arg	Ile
2900						2905					2910			
Trp	Arg	Asp	His	Ala	Thr	Pro	Asp	Val	Ile	Tyr	Ala	Glu	Val	Glu
2915						2920					2925			
Leu	Pro	Glu	Asp	Thr	Asp	Ile	Asp	Gly	Tyr	Gly	Ile	His	Pro	Ala
2930						2935					2940			
Leu	Phe	Asp	Ala	Ala	Leu	His	Pro	Leu	Leu	Ala	Leu	Thr	Gln	Pro
2945						2950					2955			
Pro	Thr	Asn	Asp	Thr	Asp	Asp	Thr	Asn	Thr	Ala	Asp	Thr	Gly	Asp
2960						2965					2970			
Gln	Val	Arg	Leu	Pro	Tyr	Ala	Phe	Thr	Gly	Ile	Ser	Leu	His	Ala
2975						2980					2985			
Thr	His	Ala	Thr	Arg	Leu	Arg	Val	Arg	Leu	Thr	Arg	Thr	Gly	Ala
2990						2995					3000			
Asp	Ala	Ile	Thr	Val	His	Thr	Ser	Asp	Thr	Thr	Gly	Ala	Pro	Val
3005						3010					3015			
Ala	Ile	Ile	Asp	Ser	Leu	Ile	Thr	Arg	Pro	Leu	Thr	Thr	Ala	Thr
3020						3025					3030			
Gly	Ser	Ala	Pro	Ala	Thr	Thr	Ala	Ala	Gly	Leu	Leu	His	Leu	Ser
3035						3040					3045			
Trp	Pro	Pro	His	Pro	Asp	Thr	Thr	Thr	Asp	Thr	Asp	Thr	Asp	Thr
3050						3055					3060			



Asp	Ala	Leu	Arg	Tyr	Gln	Val	Ile	Ala	Glu	Pro	Thr	Gln	Gln	Leu
3065						3070					3075			
Pro	Arg	Tyr	Leu	His	Asp	Leu	His	Thr	Ser	Thr	Asp	Leu	His	Thr
3080						3085					3090			
Ser	Thr	Thr	Glu	Ala	Asp	Val	Val	Val	Trp	Pro	Val	Pro	Val	Pro
3095						3100					3105			
Ser	Asn	Glu	Glu	Leu	Gln	Ala	His	Gln	Ala	Ser	Asp	Thr	Ala	Val
3110						3115					3120			
Ser	Ser	Arg	Ile	His	Thr	Leu	Thr	Arg	Gln	Thr	Leu	Thr	Val	Val
3125						3130					3135			
Gln	Asp	Trp	Leu	Thr	His	Pro	Asp	Thr	Thr	Gly	Thr	Arg	Leu	Val
3140						3145					3150			
Ile	Val	Thr	Arg	His	Gly	Val	Ser	Thr	Ser	Ala	His	Asp	Pro	Val
3155						3160					3165			
Pro	Asp	Leu	Ala	His	Ala	Ala	Val	Trp	Gly	Leu	Ile	Arg	Ser	Ala
3170						3175					3180			
Gln	Asn	Glu	His	Pro	Gly	Arg	Phe	Thr	Leu	Leu	Asp	Thr	Asp	Asp
3185						3190					3195			
Asn	Thr	Asn	Ser	Asp	Thr	Leu	Thr	Thr	Ala	Leu	Thr	Leu	Pro	Thr
3200						3205					3210			
Arg	Glu	Asn	Gln	Leu	Ala	Ile	Arg	Arg	Asp	Thr	Ile	His	Ile	Pro
3215						3220					3225			
Arg	Leu	Thr	Arg	His	Ser	Ser	Asp	Gly	Ala	Leu	Thr	Ala	Pro	Val
3230						3235					3240			
Val	Val	Asp	Pro	Glu	Gly	Thr	Val	Leu	Ile	Thr	Gly	Gly	Thr	Gly
3245						3250					3255			
Thr	Leu	Gly	Ala	Leu	Phe	Ala	Glu	His	Leu	Val	Ser	Ala	His	Gly
3260						3265					3270			
Val	Arg	His	Leu	Leu	Leu	Thr	Ser	Arg	Arg	Gly	Pro	Gln	Ala	His
3275						3280					3285			

Gly	Ala	Thr	Asp	Leu	Gln	Gln	Arg	Leu	Thr	Asp	Leu	Gly	Ala	His
3290						3295					3300			
Val	Thr	Ile	Thr	Ala	Cys	Asp	Ile	Ser	Asp	Pro	Glu	Ala	Leu	Ala
3305						3310					3315			
Ala	Leu	Val	Asn	Ser	Val	Pro	Thr	Gln	His	Arg	Leu	Thr	Ala	Val
3320						3325					3330			
Val	His	Thr	Ala	Ala	Val	Leu	Ala	Asp	Thr	Pro	Val	Thr	Glu	Leu
3335						3340					3345			
Thr	Gly	Asp	Gln	Leu	Asp	Gln	Val	Leu	Ala	Pro	Lys	Ile	Asp	Ala
3350						3355					3360			
Ala	Trp	Gln	Leu	His	Gln	Leu	Thr	Tyr	Glu	His	Asn	Leu	Ser	Ala
3365						3370					3375			
Phe	Ile	Met	Phe	Ser	Ser	Met	Ala	Gly	Met	Ile	Gly	Ser	Pro	Gly
3380						3385					3390			
Gln	Gly	Asn	Tyr	Ala	Ala	Ala	Asn	Thr	Ala	Leu	Asp	Ala	Leu	Ala
3395						3400					3405			
Asp	Tyr	Arg	His	Arg	Leu	Gly	Leu	Pro	Ala	Thr	Ser	Leu	Ala	Trp
3410						3415					3420			
Gly	Tyr	Trp	Gln	Thr	His	Thr	Gly	Leu	Thr	Ala	His	Leu	Thr	Asp
3425						3430					3435			
Val	Asp	Leu	Ala	Arg	Met	Thr	Arg	Leu	Gly	Leu	Met	Pro	Ile	Ala
3440						3445					3450			
Thr	Ser	His	Gly	Leu	Ala	Leu	Phe	Asp	Ala	Ala	Leu	Ala	Thr	Gly
3455						3460					3465			
Gln	Pro	Val	Ser	Ile	Pro	Ala	Pro	Ile	Asn	Thr	His	Thr	Leu	Ala
3470						3475					3480			
Arg	His	Ala	Arg	Asp	Asn	Thr	Leu	Ala	Pro	Ile	Leu	Ser	Ala	Leu
3485						3490					3495			
Ile	Thr	Thr	Pro	Arg	Arg	Arg	Ala	Ala	Ser	Ala	Ala	Thr	Asp	Leu
3500						3505					3510			

Ala	Ala	Arg	Leu	Asn	Gly	Leu	Ser	Pro	Gln	Gln	Gln	Gln	Gln	Thr	
3515						3520					3525				
Leu	Ala	Thr	Leu	Val	Ala	Ala	Ala	Thr	Ala	Thr	Val	Leu	Gly	His	
3530						3535					3540				
His	Thr	Pro	Glu	Ser	Ile	Ser	Pro	Ala	Thr	Ala	Phe	Lys	Asp	Leu	
3545						3550					3555				
Gly	Ile	Asp	Ser	Leu	Thr	Ala	Leu	Glu	Leu	Arg	Asn	Thr	Leu	Thr	
3560						3565					3570				
His	Asn	Thr	Gly	Leu	Asn	Leu	Ser	Ser	Thr	Leu	Ile	Phe	Asp	His	
3575						3580					3585				
Pro	Thr	Pro	His	Ala	Val	Ala	Glu	His	Leu	Leu	Glu	Gln	Ile	Pro	
3590						3595					3600				
Gly	Ile	Gly	Ala	Leu	Val	Pro	Ala	Pro	Val	Val	Ile	Ala	Ala	Gly	
3605						3610					3615				
Arg	Thr	Glu	Glu	Pro	Val	Ala	Val	Val	Gly	Met	Ala	Cys	Arg	Phe	
3620						3625					3630				
Pro	Gly	Gly	Val	Ala	Ser	Ala	Asp	Gln	Leu	Trp	Asp	Leu	Val	Ile	
3635						3640					3645				
Ala	Gly	Arg	Asp	Val	Val	Gly	Asn	Phe	Pro	Ala	Asp	Arg	Gly	Trp	
3650						3655					3660				
Asp	Val	Glu	Gly	Leu	Phe	Asp	Pro	Asp	Pro	Asp	Ala	Val	Gly	Lys	
3665						3670					3675				
Thr	Tyr	Thr	Arg	Tyr	Gly	Ala	Phe	Leu	Asp	Asp	Ala	Ala	Gly	Phe	
3680						3685					3690				
Asp	Ala	Gly	Phe	Phe	Gly	Ile	Ser	Pro	Arg	Glu	Ala	Arg	Ala	Met	
3695						3700					3705				
Asp	Pro	Gln	Gln	Arg	Leu	Leu	Leu	Glu	Val	Cys	Trp	Glu	Ala	Leu	
3710						3715					3720				
Glu	Thr	Ala	Gly	Ile	Pro	Ala	His	Thr	Leu	Ala	Gly	Thr	Ser	Thr	
3725						3730					3735				

Gly Val Phe Val Gly Ala Gly Ala Gln Ser Tyr Gly Ala Thr Asn  
 3740 3745 3750  
 Ser Asp Asp Ala Glu Gly Tyr Ala Met Thr Gly Gly Ala Thr Ser  
 3755 3760 3765  
 Val Met Ser Gly Arg Ile Ala Tyr Thr Leu Gly Leu Glu Gly Pro  
 3770 3775 3780  
 Ala Ile Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Ile  
 3785 3790 3795  
 His Leu Ala Cys Gln Ser Leu Arg Asn Asn Glu Ser Gln Leu Ala  
 3800 3805 3810  
 Leu Ala Gly Gly Val Thr Val Met Ser Thr Pro Ala Ile Phe Thr  
 3815 3820 3825  
 Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Cys Lys  
 3830 3835 3840  
 Ala Phe Ala Ala Thr Ala Asp Gly Thr Gly Trp Gly Glu Gly Ala  
 3845 3850 3855  
 Ala Val Leu Val Leu Glu Arg Leu Ser Glu Ala Arg Arg Asn Asn  
 3860 3865 3870  
 His Pro Val Leu Ala Ile Val Ala Gly Ser Ala Ile Asn Gln Asp  
 3875 3880 3885  
 Gly Ala Ser Asn Gly Leu Thr Ala Pro His Gly Pro Ser Gln Gln  
 3890 3895 3900  
 Arg Val Ile Asn Gln Ala Leu Ala Asn Ala Gly Leu Thr His Asp  
 3905 3910 3915  
 Gln Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly  
 3920 3925 3930  
 Asp Pro Ile Glu Ala Gly Ala Leu His Ala Thr Tyr Gly His His  
 3935 3940 3945  
 His Thr Pro Asp Gln Pro Leu Trp Leu Gly Ser Ile Lys Ser Asn  
 3950 3955 3960

Ile Gly His Thr Gln Ala Ala Ala Gly Ala Ala Gly Val Val Lys  
 3965 3970 3975  
  
 Met Ile Gln Ala Ile Thr His Ala Thr Leu Pro Ala Thr Leu His  
 3980 3985 3990  
  
 Val Asp Gln Pro Ser Pro His Ile Asp Trp Ser Ser Gly Thr Val  
 3995 4000 4005  
  
 Arg Leu Leu Thr Glu Pro Ile Gln Trp Pro Asn Thr Asp His Pro  
 4010 4015 4020  
  
 Arg Thr Ala Ala Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala  
 4025 4030 4035  
  
 His Leu Ile Leu Gln Gln Pro Pro Thr Pro Asp Thr Thr Gln Thr  
 4040 4045 4050  
  
 Pro Asn Pro Thr Thr Gly Ser Asp Pro Ala Val Gly Ser Asp Ser  
 4055 4060 4065  
  
 Ala Val Gly Ser Asp Pro Ala Val Gly Val Leu Val Trp Pro Leu  
 4070 4075 4080  
  
 Ser Ala Arg Ser Ala Pro Gly Leu Ser Ala Gln Ala Ala Arg Leu  
 4085 4090 4095  
  
 Tyr Gln His Leu Ser Ala His Pro Asp Leu Asp Pro Ile Asp Val  
 4100 4105 4110  
  
 Ala His Ser Leu Ala Thr Thr Arg Ser His His Pro His Arg Ala  
 4115 4120 4125  
  
 Thr Ile Thr Thr Ser Ile Glu His His Ser Glu Asn Asn His Asp  
 4130 4135 4140  
  
 Thr Thr Asp Ala Leu Ala Ala Leu His Ala Leu Ala Asn Asn Gly  
 4145 4150 4155  
  
 Thr His Pro Leu Leu Ser Arg Gly Leu Leu Thr Pro Gln Gly Pro  
 4160 4165 4170  
  
 Gly Lys Thr Val Phe Val Phe Pro Gly Gln Gly Ser Gln Tyr Pro  
 4175 4180 4185  
  
 Gly Met Gly Ala Asp Leu Tyr Arg Gln Phe Pro Val Phe Ala His

4190

4195

4200

Ala Leu Asp Ala Cys Asp Ala Ala Leu Gln Pro Phe Thr Gly Trp  
 4205 4210 4215

Ser Val Leu Ala Val Leu His Asp Glu Pro Glu Ala Pro Ser Leu  
 4220 4225 4230

Glu Arg Val Asp Val Val Gln Pro Val Leu Phe Ser Val Met Val  
 4235 4240 4245

Ser Leu Ala Ala Leu Trp Arg Trp Ala Gly Ile Thr Pro Asp Ala  
 4250 4255 4260

Val Ile Gly His Ser Gln Gly Glu Ile Ala Ala Ala His Val Ala  
 4265 4270 4275

Gly Ala Leu Thr Leu Pro Glu Ala Ala Ala Val Val Ala Leu Arg  
 4280 4285 4290

Ser Arg Val Leu Thr Asp Leu Ala Gly Ala Gly Ala Met Ala Ser  
 4295 4300 4305

Val Leu Ser Pro Glu Glu Pro Leu Thr Gln Leu Leu Ala Arg Trp  
 4310 4315 4320

Asp Gly Lys Ile Thr Val Ala Ala Val Asn Gly Pro Ala Ser Ala  
 4325 4330 4335

Val Val Ser Gly Asp Thr Thr Ala Ile Thr Glu Leu Leu Ile Thr  
 4340 4345 4350

Cys Glu His Glu Asn Ile Asp Ala Arg Ala Ile Pro Val Asp Tyr  
 4355 4360 4365

Pro Ser His Ser Pro Tyr Met Glu His Ile Arg His Gln Phe Leu  
 4370 4375 4380

Asp Glu Leu Pro Glu Leu Thr Pro Arg Pro Ser Thr Ile Ala Met  
 4385 4390 4395

Tyr Ser Thr Val Asp Gly Glu Pro His Asp Thr Ala Tyr Asp Thr  
 4400 4405 4410

Thr Thr Met Thr Ala Asp Tyr Trp Tyr Arg Asn Ile Arg Asn Thr  
 4415 4420 4425

Val	Arg	Phe	His	Asp	Thr	Val	Ala	Ala	Leu	Leu	Gly	Ala	Gly	Glu
4430						4435					4440			
Gln	Val	Phe	Leu	Glu	Leu	Ser	Pro	His	Pro	Val	Leu	Thr	Gln	Ala
4445						4450					4455			
Ile	Thr	Asp	Thr	Val	Glu	Gln	Ala	Gly	Gly	Gly	Gly	Ala	Ala	Val
4460						4465					4470			
Pro	Ala	Leu	Arg	Lys	Asp	Arg	Pro	Asp	Ala	Val	Ala	Phe	Ala	Ala
4475						4480					4485			
Ala	Leu	Gly	Gln	Leu	His	Cys	His	Gly	Ile	Ser	Pro	Ser	Trp	Asn
4490						4495					4500			
Val	Leu	Tyr	Cys	Gln	Ala	Arg	Pro	Leu	Thr	Leu	Pro	Thr	Tyr	Ala
4505						4510					4515			
Phe	Gln	His	Gln	Arg	Tyr	Trp	Leu	Leu	Pro	Thr	Ala	Gly	Asp	Phe
4520						4525					4530			
Ser	Gly	Ala	Asn	Thr	His	Ala	Met	His	Pro	Leu	Leu	Asp	Thr	Ala
4535						4540					4545			
Thr	Glu	Leu	Ala	Glu	Asn	Arg	Gly	Trp	Val	Phe	Thr	Gly	Arg	Ile
4550						4555					4560			
Ser	Pro	Arg	Thr	Gln	Pro	Trp	Leu	Asn	Glu	His	Ala	Val	Glu	Ser
4565						4570					4575			
Ala	Val	Leu	Phe	Pro	Gly	Thr	Gly	Phe	Val	Glu	Leu	Ala	Leu	His
4580						4585					4590			
Val	Ala	Asp	Arg	Ala	Gly	Tyr	Ser	Ser	Val	Asn	Glu	Leu	Ile	Val
4595						4600					4605			
His	Thr	Pro	Leu	Leu	Leu	Ala	Gly	His	Asp	Thr	Ala	Asp	Leu	Gln
4610						4615					4620			
Ile	Thr	Val	Thr	Asp	Thr	Asp	Asp	Met	Gly	Arg	Gln	Ser	Leu	Asn
4625						4630					4635			
Ile	His	Ser	Arg	Pro	His	Ile	Gly	His	Asp	Asn	Thr	Thr	Thr	Gly
4640						4645					4650			

Asp	Glu	Gln	Pro	Glu	Trp	Val	Leu	His	Ala	Ser	Ala	Val	Leu	Thr
4655						4660					4665			
Ala	Gln	Thr	Thr	Asp	His	Asn	His	Leu	Pro	Leu	Thr	Pro	Val	Pro
4670						4675					4680			
Trp	Pro	Pro	Pro	Gly	Thr	Ala	Ala	Ile	Glu	Val	Asp	Asp	Phe	Tyr
4685						4690					4695			
Asp	Asp	Leu	Ala	Ala	Gln	Gly	Tyr	Asn	Tyr	Gly	Pro	Thr	Phe	Gln
4700						4705					4710			
Gly	Val	Gln	Arg	Ile	Trp	Arg	Asp	His	Ala	Thr	Pro	Asp	Val	Ile
4715						4720					4725			
Tyr	Ala	Glu	Val	Glu	Leu	Pro	Glu	Asp	Thr	Asp	Ile	Asp	Gly	Tyr
4730						4735					4740			
Gly	Ile	His	Pro	Ala	Leu	Phe	Asp	Ala	Ala	Leu	His	Pro	Leu	Leu
4745						4750					4755			
Ala	Leu	Thr	Gln	Pro	Pro	Thr	Asn	Asp	Thr	Asp	Asp	Thr	Asn	Thr
4760						4765					4770			
Ala	Asp	Thr	Gly	Asp	Gln	Val	Arg	Leu	Pro	Tyr	Ala	Phe	Thr	Gly
4775						4780					4785			
Ile	Ser	Leu	His	Ala	Thr	His	Ala	Thr	Arg	Leu	Arg	Val	Arg	Leu
4790						4795					4800			
Thr	Arg	Thr	Gly	Ala	Asp	Ala	Ile	Thr	Val	His	Thr	Ser	Asp	Thr
4805						4810					4815			
Thr	Gly	Ala	Pro	Val	Ala	Ile	Ile	Asp	Ser	Leu	Ile	Thr	Arg	Pro
4820						4825					4830			
Leu	Thr	Thr	Ala	Thr	Gly	Ser	Ala	Pro	Ala	Thr	Thr	Ala	Ala	Gly
4835						4840					4845			
Leu	Leu	His	Leu	Ser	Trp	Pro	Pro	His	Pro	Asp	Thr	Thr	Thr	Asp
4850						4855					4860			
Thr	Asp	Thr	Asp	Thr	Asp	Ala	Leu	Arg	Tyr	Gln	Val	Ile	Ala	Glu
4865						4870					4875			



Pro	Thr	Gln	Gln	Leu	Pro	Arg	Tyr	Leu	His	Asp	Leu	His	Thr	Ser
4880						4885					4890			
Thr	Asp	Leu	His	Thr	Ser	Thr	Thr	Glu	Ala	Asp	Val	Val	Val	Trp
4895						4900					4905			
Pro	Val	Pro	Val	Pro	Ser	Asn	Glu	Glu	Leu	Gln	Ala	His	Gln	Ala
4910						4915					4920			
Ser	Asp	Thr	Ala	Val	Ser	Ser	Arg	Ile	His	Thr	Leu	Thr	Arg	Gln
4925						4930					4935			
Thr	Leu	Thr	Val	Val	Gln	Asp	Trp	Leu	Thr	His	Pro	Asp	Thr	Thr
4940						4945					4950			
Gly	Thr	Arg	Leu	Val	Ile	Val	Thr	Arg	His	Gly	Val	Ser	Thr	Ser
4955						4960					4965			
Ala	His	Asp	Pro	Val	Pro	Asp	Leu	Ala	His	Ala	Ala	Val	Trp	Gly
4970						4975					4980			
Leu	Ile	Arg	Ser	Ala	Gln	Asn	Glu	His	Pro	Gly	Arg	Phe	Thr	Leu
4985						4990					4995			
Leu	Asp	Thr	Asp	Asp	Asn	Thr	Asn	Ser	Asp	Thr	Leu	Thr	Thr	Ala
5000						5005					5010			
Leu	Thr	Leu	Pro	Thr	Arg	Glu	Asn	Gln	Leu	Ala	Ile	Arg	Arg	Asp
5015						5020					5025			
Thr	Ile	His	Ile	Pro	Arg	Leu	Thr	Arg	Thr	Ala	Val	Leu	Thr	Pro
5030						5035					5040			
Pro	Asp	Ser	Gly	Pro	Trp	Arg	Leu	Asp	Thr	Thr	Gly	Lys	Gly	Asp
5045						5050					5055			
Leu	Ala	Asn	Leu	Ala	Leu	Leu	Pro	Thr	Ala	His	Thr	Ala	Leu	Ala
5060						5065					5070			
Ser	Gly	Gln	Ile	Arg	Ile	Asp	Val	Arg	Ala	Ala	Gly	Leu	Asn	Phe
5075						5080					5085			
His	Asp	Val	Val	Val	Ala	Leu	Gly	Leu	Ile	Pro	Asp	Asp	Gly	Phe
5090						5095					5100			

Gly	Gly	Glu	Ala	Ala	Gly	Val	Ile	Ser	Glu	Ile	Gly	Pro	Asp	Val
5105						5110					5115			
Tyr	Gly	Phe	Ala	Val	Gly	Asp	Ala	Val	Thr	Gly	Met	Thr	Val	Ser
5120						5125					5130			
Gly	Ala	Phe	Ala	Pro	Ser	Thr	Val	Ala	Asp	His	Arg	Met	Val	Met
5135						5140					5145			
Thr	Ile	Pro	Ala	Arg	Trp	Ser	Phe	Pro	Gln	Ala	Ala	Ser	Ile	Pro
5150						5155					5160			
Val	Val	Phe	Leu	Thr	Ala	Tyr	Ile	Ala	Leu	Ala	Glu	Ile	Ser	Gly
5165						5170					5175			
Leu	Ser	Arg	Gly	Gln	Arg	Val	Leu	Ile	His	Ala	Gly	Thr	Gly	Gly
5180						5185					5190			
Val	Gly	Met	Ala	Ala	Ile	Gln	Leu	Ala	His	His	Leu	Gly	Ala	Glu
5195						5200					5205			
Val	Phe	Ala	Thr	Ala	Ser	Ala	Ala	Lys	Trp	Ser	Thr	Leu	Glu	Ala
5210						5215					5220			
Leu	Gly	Val	Pro	Arg	Asp	His	Ile	Ala	Ser	Ser	Arg	Thr	Leu	Asp
5225						5230					5235			
Phe	Ser	Asn	Ala	Phe	Leu	Asp	Ala	Thr	Asn	Gly	Ala	Gly	Val	Asp
5240						5245					5250			
Val	Val	Leu	Asn	Cys	Leu	Ser	Gly	Glu	Phe	Val	Glu	Ala	Ser	Leu
5255						5260					5265			
Ala	Leu	Leu	Pro	Arg	Gly	Gly	His	Phe	Val	Glu	Ile	Gly	Lys	Thr
5270						5275					5280			
Asp	Ile	Arg	Asp	Thr	Glu	Val	Ile	Ala	Ala	Thr	His	Pro	Gly	Val
5285						5290					5295			
Ile	Tyr	Arg	Ala	Leu	Asp	Leu	Leu	Ser	Val	Ser	Pro	Asp	His	Ile
5300						5305					5310			
Gln	Arg	Thr	Leu	Ala	Gln	Leu	Ser	Pro	Leu	Phe	Ala	Thr	Asp	Thr
5315						5320					5325			

Leu	Lys	Pro	Leu	Pro	Thr	Thr	Asn	Tyr	Ser	Ile	Tyr	Gln	Ala	Ile
5330						5335					5340			
Ser	Ala	Leu	Arg	Asp	Met	Ser	Gln	Ala	Arg	His	Thr	Gly	Lys	Ile
5345						5350					5355			
Val	Leu	Thr	Ala	Pro	Val	Val	Val	Asp	Pro	Glu	Gly	Thr	Val	Leu
5360						5365					5370			
Ile	Thr	Gly	Gly	Thr	Gly	Thr	Leu	Gly	Ala	Leu	Phe	Ala	Glu	His
5375						5380					5385			
Leu	Val	Ser	Ala	His	Gly	Val	Arg	His	Leu	Leu	Leu	Thr	Ser	Arg
5390						5395					5400			
Arg	Gly	Pro	Gln	Ala	His	Gly	Ala	Thr	Asp	Leu	Gln	Gln	Arg	Leu
5405						5410					5415			
Thr	Asp	Leu	Gly	Ala	His	Val	Thr	Ile	Thr	Ala	Cys	Asp	Ile	Ser
5420						5425					5430			
Asp	Pro	Glu	Ala	Leu	Ala	Ala	Leu	Val	Asn	Ser	Val	Pro	Thr	Gln
5435						5440					5445			
His	Arg	Leu	Thr	Ala	Val	Val	His	Thr	Ala	Val	Val	Leu	Ala	Asp
5450						5455					5460			
Thr	Pro	Val	Thr	Glu	Leu	Thr	Gly	Asp	Gln	Leu	Asp	Gln	Val	Leu
5465						5470					5475			
Ala	Pro	Lys	Ile	Asp	Ala	Ala	Trp	Gln	Leu	His	Gln	Leu	Thr	Tyr
5480						5485					5490			
Glu	His	Asn	Leu	Ser	Ala	Phe	Ile	Met	Phe	Ser	Ser	Met	Ala	Gly
5495						5500					5505			
Met	Ile	Gly	Ser	Pro	Gly	Leu	Gly	Asn	Tyr	Ala	Ala	Ala	Asn	Thr
5510						5515					5520			
Ala	Leu	Asp	Ala	Leu	Ala	Asp	Tyr	Arg	His	Arg	Leu	Gly	Leu	Pro
5525						5530					5535			
Ala	Thr	Ser	Leu	Ala	Trp	Gly	Tyr	Trp	Gln	Thr	Arg	Thr	Gly	Leu
5540						5545					5550			
Thr	Ala	His	Leu	Thr	Asp	Val	Asp	Leu	Ala	Arg	Met	Thr	Arg	Leu

5555

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Gly Leu Met Pro Ile Ala Thr Ser His Gly Leu Ala Leu Phe Asp  
 5570 5575 5580

Ala Ala Leu Ala Thr Gly Gln Pro Val Ser Ile Pro Ala Pro Ile  
 5585 5590 5595

Asn Thr His Thr Leu Ala Arg His Ala Arg Asp Asn Thr Leu Ala  
 5600 5605 5610

Pro Ile Leu Ser Ala Leu Ile Thr Thr Pro Arg Arg Arg Ala Ala  
 5615 5620 5625

Ser Ala Ala Thr Asp Leu Ala Ala Arg Leu Asn Gly Leu Ser Pro  
 5630 5635 5640

Gln Gln Gln Gln Gln Thr Leu Ala Thr Leu Val Ala Ala Ala Thr  
 5645 5650 5655

Ala Thr Val Leu Gly His His Thr Pro Glu Ser Ile Ser Pro Ala  
 5660 5665 5670

Thr Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Leu Glu  
 5675 5680 5685

Leu Arg Asn Thr Leu Thr His Asn Thr Gly Leu Asn Leu Ser Ser  
 5690 5695 5700

Thr Leu Ile Phe Asp His Pro Thr Pro His Ala Val Ala Glu His  
 5705 5710 5715

Leu Leu Glu Gln Ile Pro Gly Ile Gly Ala Leu Val Pro Ala Pro  
 5720 5725 5730

Val Val Ile Ala Ala Gly Arg Thr Glu Glu Pro Val Ala Val Val  
 5735 5740 5745

Gly Met Ala Cys Arg Phe Pro Gly Gly Val Ala Ser Ala Asp Gln  
 5750 5755 5760

Leu Trp Asp Leu Val Ile Ala Gly Arg Asp Val Val Gly Asn Phe  
 5765 5770 5775

Pro Ala Asp Arg Gly Trp Asp Val Glu Gly Leu Phe Asp Pro Asp

5780

5785

5790

Pro Asp Ala Val Gly Lys Thr Tyr Thr Arg Tyr Gly Ala Phe Leu  
5795 5800 5805

Asp Asp Ala Ala Gly Phe Asp Ala Gly Phe Phe Gly Ile Ser Pro  
5810 5815 5820

Arg Glu Ala Arg Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu  
5825 5830 5835

Val Cys Trp Glu Ala Leu Glu Thr Ala Gly Ile Pro Ala His Thr  
5840 5845 5850

Leu Ala Gly Thr Ser Thr Gly Val Phe Val Gly Ala Gly Ala Gln  
5855 5860 5865

Ser Tyr Gly Ala Thr Asn Ser Asp Gly Ala Glu Gly Tyr Ala Met  
5870 5875 5880

Thr Gly Gly Ala Ile Ser Val Met Ser Gly Arg Ile Ala Tyr Thr  
5885 5890 5895

Leu Gly Leu Glu Gly Pro Ala Ile Thr Val Asp Thr Ala Cys Ser  
5900 5905 5910

Ser Ser Leu Val Ala Ile His Leu Ala Cys Gln Ser Leu Arg Asn  
5915 5920 5925

Asn Glu Ser Gln Leu Ala Leu Ala Gly Gly Val Thr Val Met Ser  
5930 5935 5940

Thr Pro Ala Ile Phe Thr Glu Phe Ser Arg Gln Arg Gly Leu Ala  
5945 5950 5955

Pro Asp Gly Arg Cys Lys Ala Phe Ala Ala Thr Ala Asp Gly Thr  
5960 5965 5970

Gly Phe Gly Glu Gly Ala Ala Val Leu Val Leu Glu Arg Leu Ser  
5975 5980 5985

Glu Ala Arg Arg Asn Asn His Pro Val Leu Ala Ile Val Ala Gly  
5990 5995 6000

Ser Ala Ile Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro  
6005 6010 6015

His Gly Pro Ser Gln Gln Arg Val Ile Asn Gln Ala Leu Ala Asn  
 6020 6025 6030

Ala Gly Leu Thr His Asp Gln Val Asp Ala Val Glu Ala His Gly  
 6035 6040 6045

Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala Ser Ala Leu His  
 6050 6055 6060

Ala Thr Tyr Gly His His His Thr Pro Asp Gln Pro Leu Trp Leu  
 6065 6070 6075

Gly Ser Ile Lys Ser Asn Ile Gly His Thr Gln Ala Ala Ala Gly  
 6080 6085 6090

Ala Ala Gly Val Val Lys Met Ile Gln Ala Ile Thr His Ala Thr  
 6095 6100 6105

Leu Pro Ala Thr Leu His Val Asp Gln Pro Ser Pro His Ile Asp  
 6110 6115 6120

Trp Ser Ser Gly Thr Val Arg Leu Leu Thr Glu Pro Ile Gln Trp  
 6125 6130 6135

Pro Asn Thr Asp His Pro Arg Thr Ala Ala Val Ser Ser Phe Gly  
 6140 6145 6150

Ile Ser Gly Thr Asn Ala His Leu Ile Leu Gln Gln Pro Pro Thr  
 6155 6160 6165

Pro Asp Thr Thr Gln Thr Pro Asn Thr Thr Thr Gly Ser Asp Pro  
 6170 6175 6180

Ala Val Gly Ser Asp Ser Ala Val Gly Ser Asp Pro Ala Val Gly  
 6185 6190 6195

Val Leu Val Trp Pro Leu Ser Ala Arg Ser Ala Pro Gly Leu Ser  
 6200 6205 6210

Ala Gln Ala Ala Arg Leu Tyr Gln His Leu Ser Ala His Pro Asp  
 6215 6220 6225

Leu Asp Pro Ile Asp Val Ala His Ser Leu Ala Thr Thr Arg Ser  
 6230 6235 6240

His	His	Pro	His	Arg	Ala	Thr	Ile	Thr	Thr	Ser	Ile	Glu	His	His
6245						6250					6255			
Ser	Glu	Asn	Asn	His	Asp	Thr	Thr	Asp	Ala	Leu	Ala	Ala	Leu	His
6260						6265					6270			
Ala	Leu	Ala	Asn	Asn	Gly	Thr	His	Pro	Leu	Leu	Ser	Arg	Gly	Leu
6275						6280					6285			
Leu	Thr	Pro	Gln	Gly	Pro	Gly	Lys	Thr	Val	Phe	Val	Phe	Pro	Gly
6290						6295					6300			
Gln	Gly	Ser	Gln	Tyr	Pro	Gly	Met	Gly	Ala	Asp	Leu	Tyr	Arg	Gln
6305						6310					6315			
Phe	Pro	Val	Phe	Ala	His	Ala	Leu	Asp	Ala	Cys	Asp	Ala	Ala	Leu
6320						6325					6330			
Gln	Pro	Phe	Thr	Gly	Trp	Ser	Val	Leu	Ala	Val	Leu	His	Asp	Glu
6335						6340					6345			
Pro	Glu	Ala	Pro	Ser	Leu	Glu	Arg	Val	Asp	Val	Val	Gln	Pro	Val
6350						6355					6360			
Leu	Phe	Ser	Val	Met	Val	Ser	Leu	Ala	Ala	Leu	Trp	Arg	Trp	Ala
6365						6370					6375			
Gly	Ile	Thr	Pro	Asp	Ala	Val	Ile	Gly	His	Ser	Gln	Gly	Glu	Ile
6380						6385					6390			
Ala	Ala	Ala	His	Val	Ala	Gly	Ala	Leu	Thr	Leu	Pro	Glu	Ala	Ala
6395						6400					6405			
Ala	Val	Val	Ala	Leu	Arg	Ser	Arg	Val	Leu	Thr	Asp	Leu	Ala	Gly
6410						6415					6420			
Ala	Gly	Ala	Met	Ala	Ser	Val	Leu	Ser	Pro	Glu	Glu	Pro	Leu	Thr
6425						6430					6435			
Gln	Leu	Leu	Ala	Arg	Trp	Asp	Gly	Lys	Ile	Thr	Val	Ala	Ala	Val
6440						6445					6450			
Asn	Gly	Pro	Ala	Ser	Ala	Val	Val	Ser	Gly	Asp	Thr	Thr	Ala	Ile
6455						6460					6465			

Thr	Glu	Leu	Leu	Ile	Thr	Cys	Glu	His	Glu	Asn	Ile	Asp	Ala	Arg
6470						6475					6480			
Ala	Ile	Pro	Val	Asp	Tyr	Pro	Ser	His	Ser	Pro	Tyr	Met	Glu	His
6485						6490					6495			
Ile	Arg	His	Gln	Phe	Leu	Asp	Glu	Leu	Pro	Glu	Leu	Thr	Pro	Arg
6500						6505					6510			
Pro	Ser	Thr	Ile	Ala	Met	Tyr	Ser	Thr	Val	Asp	Gly	Glu	Pro	His
6515						6520					6525			
Asp	Thr	Ala	Tyr	Asp	Thr	Thr	Thr	Met	Thr	Ala	Asp	Tyr	Trp	Tyr
6530						6535					6540			
Arg	Asn	Ile	Arg	Asn	Thr	Val	Arg	Phe	His	Asp	Thr	Val	Ala	Ala
6545						6550					6555			
Leu	Leu	Gly	Ala	Gly	Glu	Gln	Val	Phe	Leu	Glu	Leu	Ser	Pro	His
6560						6565					6570			
Pro	Val	Leu	Thr	Gln	Ala	Ile	Thr	Asp	Thr	Val	Glu	Gln	Ala	Gly
6575						6580					6585			
Gly	Gly	Gly	Ala	Ala	Val	Pro	Ala	Leu	Arg	Lys	Asp	Arg	Pro	Asp
6590						6595					6600			
Ala	Val	Ala	Phe	Ala	Ala	Ala	Leu	Gly	Gln	Leu	His	Cys	His	Gly
6605						6610					6615			
Ile	Ser	Pro	Ser	Trp	Asn	Val	Leu	Tyr	Cys	Gln	Ala	Arg	Pro	Leu
6620						6625					6630			
Thr	Leu	Pro	Thr	Tyr	Ala	Phe	Gln	His	Gln	Arg	Tyr	Trp	Leu	Leu
6635						6640					6645			
Pro	Thr	Ala	Gly	Asp	Phe	Ser	Gly	Ala	Asn	Thr	His	Ala	Met	His
6650						6655					6660			
Pro	Leu	Leu	Asp	Thr	Ala	Thr	Glu	Leu	Ala	Glu	Asn	Arg	Gly	Trp
6665						6670					6675			
Val	Phe	Thr	Gly	Arg	Ile	Ser	Pro	Arg	Thr	Gln	Pro	Trp	Leu	Asn
6680						6685					6690			
Glu	His	Ala	Val	Glu	Ser	Ala	Val	Leu	Phe	Pro	Gly	Thr	Gly	Phe



6695

6700

6705

Val Glu Leu Ala Leu His Val Ala Asp Arg Ala Gly Tyr Ser Ser  
6710 6715 6720

Val Asn Glu Leu Ile Val His Thr Pro Leu Leu Leu Ala Gly His  
6725 6730 6735

Asp Thr Ala Asp Leu Gln Ile Thr Val Thr Asp Thr Asp Asp Met  
6740 6745 6750

Gly Arg Gln Ser Leu Asn Ile His Ser Arg Pro His Ile Gly His  
6755 6760 6765

Asp Asn Thr Thr Thr Gly Asp Glu Gln Pro Glu Trp Val Leu His  
6770 6775 6780

Ala Ser Ala Val Leu Thr Ala Gln Thr Thr Asp His Asn His Leu  
6785 6790 6795

Pro Leu Thr Pro Val Pro Trp Pro Pro Pro Gly Thr Ala Ala Ile  
6800 6805 6810

Glu Val Asp Asp Phe Tyr Asp Asp Leu Ala Ala Gln Gly Tyr Asn  
6815 6820 6825

Tyr Gly Pro Thr Phe Gln Gly Val Gln Arg Ile Trp Arg Asp His  
6830 6835 6840

Ala Thr Pro Asp Val Ile Tyr Ala Glu Val Glu Leu Pro Glu Asp  
6845 6850 6855

Thr Asp Ile Asp Gly Tyr Gly Ile His Pro Ala Leu Phe Asp Ala  
6860 6865 6870

Ala Leu His Pro Leu Leu Ala Leu Thr Gln Pro Pro Thr Asn Asp  
6875 6880 6885

Thr Asp Asp Thr Asn Thr Ala Asp Thr Gly Asp Gln Val Arg Leu  
6890 6895 6900

Pro Tyr Ala Phe Thr Gly Ile Ser Leu His Ala Thr His Ala Thr  
6905 6910 6915

Arg Leu Arg Val Arg Leu Thr Arg Thr Gly Ala Asp Ala Ile Thr

6920	6925	6930
Val His Thr Ser Asp Thr Thr Gly Ala Pro Val Ala Ile Ile Asp 6935 6940 6945		
Ser Leu Ile Thr Arg Pro Leu Thr Thr Ala Thr Gly Ser Ala Pro 6950 6955 6960		
Ala Thr Thr Ala Ala Gly Leu Leu His Leu Ser Trp Pro Pro His 6965 6970 6975		
Pro Asp Thr Thr Thr Asp Thr Asp Thr Asp Thr Asp Ala Leu Arg 6980 6985 6990		
Tyr Arg Val Ile Ala Glu Pro Thr Gln Gln Leu Pro Arg Tyr Leu 6995 7000 7005		
His Asp Leu His Thr Ser Thr Asp Leu His Thr Ser Thr Thr Glu 7010 7015 7020		
Ala Asp Val Val Val Trp Pro Val Pro Val Pro Ser Asn Glu Glu 7025 7030 7035		
Leu Gln Ala His Gln Ala Ser Asp Thr Ala Val Ser Ser Arg Ile 7040 7045 7050		
His Thr Leu Thr Arg Gln Thr Leu Thr Val Val Gln Asp Trp Leu 7055 7060 7065		
Thr His Pro Asp Thr Thr Gly Thr Arg Leu Val Ile Val Thr Arg 7070 7075 7080		
His Gly Val Ser Thr Ser Ala His Asp Pro Val Pro Asp Leu Ala 7085 7090 7095		
His Ala Ala Val Trp Gly Leu Ile Arg Ser Ala Gln Asn Glu His 7100 7105 7110		
Pro Gly Arg Phe Thr Leu Leu Asp Thr Asp Asp Asn Thr Asn Ser 7115 7120 7125		
Asp Thr Leu Thr Thr Ala Leu Thr Leu Pro Thr Arg Glu Asn Gln 7130 7135 7140		
Leu Ala Ile Arg Arg Asp Thr Ile His Ile Pro Arg Leu Thr Arg 7145 7150 7155		

His Ser	Ser Asp Gly Ala Leu	Thr Ala Pro Val Val	Val Asp Pro
7160	7165	7170	
Glu Gly	Thr Val Leu Ile Thr	Gly Gly Thr Gly Thr	Leu Gly Ala
7175	7180	7185	
Leu Phe	Ala Glu His Leu Val	Ser Ala His Gly Val	Arg His Leu
7190	7195	7200	
Leu Leu	Thr Ser Arg Arg Gly	Pro Gln Ala His Gly	Ala Thr Asp
7205	7210	7215	
Leu Gln	Gln Arg Leu Thr Asp	Leu Gly Ala His Val	Thr Ile Thr
7220	7225	7230	
Ala Cys	Asp Ile Ser Asp Pro	Glu Ala Leu Ala Ala	Leu Val Asn
7235	7240	7245	
Ser Val	Pro Thr Gln His Arg	Leu Thr Ala Val Val	His Thr Ala
7250	7255	7260	
Ala Val	Leu Ala Asp Thr Pro	Val Thr Glu Leu Thr	Gly Asp Gln
7265	7270	7275	
Leu Asp	Gln Val Leu Ala Pro	Lys Ile Asp Ala Ala	Trp Gln Leu
7280	7285	7290	
His Gln	Leu Thr Tyr Glu His	Asn Leu Ser Ala Phe	Ile Met Phe
7295	7300	7305	
Ser Ser	Met Ala Gly Met Ile	Gly Ser Pro Gly Gln	Gly Asn Tyr
7310	7315	7320	
Ala Ala	Ala Asn Thr Ala Leu	Asp Ala Leu Ala Asp	Tyr Arg His
7325	7330	7335	
Arg Leu	Gly Leu Pro Ala Thr	Ser Leu Ala Trp Gly	Tyr Trp Gln
7340	7345	7350	
Thr His	Thr Gly Leu Thr Ala	His Leu Thr Asp Val	Asp Leu Ala
7355	7360	7365	
Arg Met	Thr Arg Leu Gly Leu	Met Pro Ile Ala Thr	Ser His Gly
7370	7375	7380	

Leu Ala	Leu Phe Asp Ala	Ala	Leu Ala Thr Gly Gln	Pro Val Ser
7385		7390		7395
Ile Pro	Ala Pro Ile Asn Thr	His Thr Leu Ala Arg	His Ala Arg	
7400		7405		7410
Asp Asn	Thr Leu Ala Pro Ile	Leu Ser Ala Leu Ile	Thr Thr Pro	
7415		7420		7425
Arg Arg	Arg Ala Ala Ser Ala	Ala Thr Asp Leu Ala	Ala Arg Leu	
7430		7435		7440
Asn Gly	Leu Ser Pro Gln Gln	Gln Gln Gln Thr Leu	Ala Thr Leu	
7445		7450		7455
Val Ala	Ala Ala Thr Ala Thr	Val Leu Gly His His	Thr Pro Glu	
7460		7465		7470
Ser Ile	Ser Pro Ala Thr Ala	Phe Lys Asp Leu Gly	Ile Asp Ser	
7475		7480		7485
Leu Thr	Ala Leu Glu Leu Arg	Asn Thr Leu Thr His	Asn Thr Gly	
7490		7495		7500
Leu Asp	Leu Pro Pro Thr Leu	Ile Phe Asp His Pro	Thr Pro Thr	
7505		7510		7515
Ala Leu	Thr Gln His Leu His	Thr Arg Leu Thr Thr	Gly Ala Leu	
7520		7525		7530
Val Pro	Ala Pro Val Val Ile	Ala Ala Gly Arg Thr	Glu Glu Pro	
7535		7540		7545
Val Ala	Val Val Gly Met Ala	Cys Arg Phe Pro Gly	Gly Val Ala	
7550		7555		7560
Ser Ala	Asp Gln Leu Trp Asp	Leu Val Ile Ala Gly	Arg Asp Val	
7565		7570		7575
Val Gly	Asn Phe Pro Ala Asp	Arg Gly Trp Asp Val	Glu Gly Leu	
7580		7585		7590
Phe Asp	Pro Asp Pro Asp Ala	Val Gly Lys Thr Tyr	Thr Arg Tyr	
7595		7600		7605

Gly Ala	Phe Leu Asp Asp	Ala	Ala Gly Phe Asp	Ala	Gly Phe Phe
7610		7615		7620	
Gly Ile	Ser Pro Arg Glu	Ala	Arg Ala Met Asp	Pro	Gln Gln Arg
7625		7630		7635	
Leu Leu	Leu Glu Val Cys	Trp	Glu Ala Leu Glu	Thr	Ala Gly Ile
7640		7645		7650	
Pro Ala	His Thr Leu Ala	Gly	Thr Ser Thr Gly	Val	Phe Val Gly
7655		7660		7665	
Ala Trp	Ala Gln Ser Tyr	Gly	Ala Thr Asn Ser	Asp	Asp Ala Glu
7670		7675		7680	
Gly Tyr	Ala Met Thr Gly	Gly	Ala Ile Ser Val	Met	Ser Gly Arg
7685		7690		7695	
Ile Ala	Tyr Thr Leu Gly	Leu	Glu Gly Pro Ala	Ile	Thr Val Asp
7700		7705		7710	
Thr Ala	Cys Ser Ser Ser	Leu	Val Ala Ile His	Leu	Ala Cys Gln
7715		7720		7725	
Ser Leu	Arg Asn Asn Glu	Ser	Gln Leu Ala Leu	Ala	Gly Gly Val
7730		7735		7740	
Thr Val	Met Ser Thr Pro	Ala	Val Phe Thr Asp	Phe	Ser Arg Gln
7745		7750		7755	
Arg Gly	Leu Ala Pro Asp	Gly	Arg Cys Lys Ala	Phe	Ala Ala Thr
7760		7765		7770	
Ala Asp	Gly Thr Gly Phe	Gly	Glu Gly Ala Ala	Val	Leu Val Leu
7775		7780		7785	
Glu Arg	Leu Ser Glu Ala	Arg	Arg Asn Asn His	Pro	Val Leu Ala
7790		7795		7800	
Ile Val	Ala Gly Ser Ala	Ile	Asn Gln Asp Gly	Ala	Ser Asn Gly
7805		7810		7815	
Leu Thr	Ala Pro His Gly	Pro	Ser Gln Gln Arg	Val	Ile Asn Gln
7820		7825		7830	

Ala	Leu	Ala	Asn	Ala	Gly	Leu	Thr	His	Asp	Gln	Val	Asp	Ala	Val
7835						7840					7845			
Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu	Ala
7850						7855					7860			
Gly	Ala	Leu	His	Ala	Thr	Tyr	Gly	His	His	His	Thr	Pro	Asp	Gln
7865						7870					7875			
Pro	Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile	Gly	His	Thr	Gln
7880						7885					7890			
Ala	Ala	Ala	Gly	Ala	Ala	Gly	Val	Val	Lys	Met	Ile	Gln	Ala	Ile
7895						7900					7905			
Thr	His	Ala	Thr	Leu	Pro	Ala	Thr	Leu	His	Val	Asp	Gln	Pro	Ser
7910						7915					7920			
Pro	His	Ile	Asp	Trp	Ser	Ser	Gly	Thr	Val	Arg	Leu	Leu	Thr	Glu
7925						7930					7935			
Pro	Ile	Gln	Trp	Pro	Asn	Thr	Asp	His	Pro	Arg	Thr	Ala	Ala	Val
7940						7945					7950			
Ser	Ser	Phe	Gly	Ile	Ser	Gly	Thr	Asn	Ala	His	Leu	Ile	Leu	Gln
7955						7960					7965			
Gln	Pro	Pro	Thr	Pro	Asp	Thr	Thr	Gln	Thr	Pro	Asn	Thr	Thr	Thr
7970						7975					7980			
Gly	Ser	Asp	Pro	Ala	Val	Gly	Ser	Asp	Pro	Ala	Val	Gly	Val	Leu
7985						7990					7995			
Val	Trp	Pro	Leu	Ser	Ala	Arg	Ser	Ala	Pro	Gly	Leu	Ser	Ala	Gln
8000						8005					8010			
Ala	Ala	Arg	Leu	Tyr	Gln	His	Leu	Ser	Ala	His	Pro	Asp	Leu	Asp
8015						8020					8025			
Pro	Ile	Asp	Val	Ala	His	Ser	Leu	Ala	Thr	Thr	Arg	Ser	His	His
8030						8035					8040			
Pro	His	Arg	Ala	Thr	Ile	Thr	Thr	Ser	Ile	Glu	His	His	Ser	Glu
8045						8050					8055			

Asn	Asn	His	Asp	Thr	Thr	Asp	Ala	Leu	Ala	Ala	Leu	His	Ala	Leu
8060						8065					8070			
Ala	Asn	Asn	Gly	Thr	His	Pro	Leu	Leu	Ser	Arg	Gly	Leu	Leu	Thr
8075						8080					8085			
Pro	Gln	Gly	Pro	Gly	Lys	Thr	Val	Phe	Val	Phe	Pro	Gly	Gln	Gly
8090						8095					8100			
Ser	Gln	Tyr	Pro	Gly	Met	Gly	Ala	Asp	Leu	Tyr	Arg	Gln	Phe	Pro
8105						8110					8115			
Val	Phe	Ala	His	Ala	Leu	Asp	Ala	Cys	Asp	Ala	Ala	Leu	Gln	Pro
8120						8125					8130			
Phe	Thr	Gly	Trp	Ser	Val	Leu	Ala	Val	Leu	His	Asp	Glu	Pro	Glu
8135						8140					8145			
Ala	Pro	Ser	Leu	Glu	Arg	Val	Asp	Val	Val	Gln	Pro	Val	Leu	Phe
8150						8155					8160			
Ser	Val	Met	Val	Ser	Leu	Ala	Ala	Leu	Trp	Arg	Trp	Ala	Gly	Ile
8165						8170					8175			
Thr	Pro	Asp	Ala	Val	Ile	Gly	His	Ser	Gln	Gly	Glu	Ile	Ala	Ala
8180						8185					8190			
Ala	His	Val	Ala	Gly	Ala	Leu	Thr	Leu	Pro	Glu	Ala	Ala	Ala	Val
8195						8200					8205			
Val	Ala	Leu	Arg	Ser	Arg	Val	Leu	Thr	Asp	Leu	Ala	Gly	Ala	Gly
8210						8215					8220			
Ala	Met	Ala	Ser	Val	Leu	Ser	Pro	Glu	Glu	Pro	Leu	Thr	Gln	Leu
8225						8230					8235			
Leu	Ala	Arg	Trp	Asp	Gly	Lys	Ile	Thr	Val	Ala	Ala	Val	Asn	Gly
8240						8245					8250			
Pro	Ala	Ser	Ala	Val	Val	Ser	Gly	Asp	Thr	Thr	Ala	Ile	Thr	Glu
8255						8260					8265			
Leu	Leu	Ile	Thr	Cys	Glu	His	Glu	Asn	Ile	Asp	Ala	Arg	Ala	Ile
8270						8275					8280			
Pro	Val	Asp	Tyr	Pro	Ser	His	Ser	Pro	Tyr	Met	Glu	His	Ile	Arg

8285		8290		8295
His Gln Phe Leu Asp Glu Leu Pro Glu Leu Thr Pro Arg Pro Ser				
8300		8305		8310
Thr Ile Ala Met Tyr Ser Thr Val Asp Gly Glu Pro His Asp Thr				
8315		8320		8325
Ala Tyr Asp Thr Thr Thr Met Thr Ala Asp Tyr Trp Tyr Arg Asn				
8330		8335		8340
Ile Arg Asn Thr Val Arg Phe His Asp Thr Val Ala Ala Leu Leu				
8345		8350		8355
Gly Ala Gly Glu Gln Val Phe Leu Glu Leu Ser Pro His Pro Val				
8360		8365		8370
Leu Thr Gln Ala Ile Thr Asp Thr Val Glu Gln Ala Gly Gly Gly				
8375		8380		8385
Gly Ala Ala Val Pro Ala Leu Arg Lys Asp Arg Pro Asp Ala Val				
8390		8395		8400
Ala Phe Ala Ala Ala Leu Gly Gln Leu His Cys His Gly Ile Ser				
8405		8410		8415
Pro Ser Trp Asn Val Leu Tyr Cys Gln Ala Arg Pro Leu Thr Leu				
8420		8425		8430
Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Leu Pro Thr				
8435		8440		8445
Ala Gly Asp Phe Ser Gly Ala Asn Thr His Ala Met His Pro Leu				
8450		8455		8460
Leu Asp Thr Ala Thr Glu Leu Ala Glu Asn Arg Gly Trp Val Phe				
8465		8470		8475
Thr Gly Arg Ile Ser Pro Arg Thr Gln Pro Trp Leu Asn Glu His				
8480		8485		8490
Ala Val Glu Ser Ala Val Leu Phe Pro Gly Thr Gly Phe Val Glu				
8495		8500		8505
Leu Ala Leu His Val Ala Asp Arg Ala Gly Tyr Ser Ser Val Asn				
8510		8515		8520



Glu	Leu	Ile	Val	His	Thr	Pro	Leu	Leu	Leu	Ala	Gly	His	Asp	Thr
8525						8530					8535			
Ala	Asp	Leu	Gln	Ile	Thr	Val	Thr	Asp	Thr	Asp	Asp	Met	Gly	Arg
8540						8545					8550			
Gln	Ser	Leu	Asn	Ile	His	Ser	His	Pro	His	Ile	Gly	His	Asp	Asn
8555						8560					8565			
Thr	Thr	Thr	Gly	Asp	Glu	Gln	Pro	Glu	Trp	Val	Leu	His	Ala	Ser
8570						8575					8580			
Ala	Val	Leu	Thr	Ala	Gln	Thr	Thr	Asp	His	Asn	His	Leu	Pro	Leu
8585						8590					8595			
Thr	Pro	Val	Pro	Trp	Pro	Pro	Pro	Gly	Thr	Ala	Ala	Ile	Glu	Val
8600						8605					8610			
Asp	Asp	Phe	Tyr	Asp	Asp	Leu	Ala	Ala	Gln	Gly	Tyr	Asn	Tyr	Gly
8615						8620					8625			
Pro	Thr	Phe	Gln	Gly	Val	Gln	Arg	Ile	Trp	Arg	Asp	His	Ala	Thr
8630						8635					8640			
Pro	Asp	Val	Ile	Tyr	Ala	Glu	Val	Glu	Leu	Pro	Glu	Asp	Thr	Asp
8645						8650					8655			
Ile	Asp	Gly	Tyr	Gly	Ile	His	Pro	Ala	Leu	Phe	Asp	Ala	Ala	Leu
8660						8665					8670			
His	Pro	Leu	Leu	Ala	Leu	Thr	Gln	Pro	Pro	Thr	Asn	Asp	Thr	Asp
8675						8680					8685			
Asp	Thr	Asn	Thr	Ala	Asp	Thr	Gly	Asp	Gln	Val	Arg	Leu	Pro	Tyr
8690						8695					8700			
Ala	Phe	Thr	Gly	Ile	Ser	Leu	His	Ala	Thr	His	Ala	Thr	Arg	Leu
8705						8710					8715			
Arg	Val	Arg	Leu	Thr	Arg	Thr	Gly	Ala	Asp	Ala	Ile	Thr	Val	His
8720						8725					8730			
Thr	Ser	Asp	Thr	Thr	Gly	Ala	Pro	Val	Ala	Ile	Ile	Asp	Ser	Leu
8735						8740					8745			

Ile Thr Arg Pro Leu Thr Thr Ala Thr Gly Ser Ala Pro Ala Thr  
8750 8755 8760

Thr Ala Ala Gly Leu Leu His Leu Ser Trp Pro Pro His Pro Asp  
8765 8770 8775

Thr Thr Thr Asp Thr Asp Thr Asp Thr Asp Ala Leu Arg Tyr Gln  
8780 8785 8790

Val Ile Ala Glu Pro Thr Gln Gln Leu Pro Arg Tyr Leu His Asp  
8795 8800 8805

Leu His Thr Ser Thr Asp Leu His Thr Ser Thr Thr Glu Ala Asp  
8810 8815 8820

Val Val Val Trp Pro Val Pro Val Pro Ser Asn Glu Glu Leu Gln  
8825 8830 8835

Ala His Gln Ala Ser Asp Thr Ala Val Ser Ser Arg Ile His Thr  
8840 8845 8850

Leu Thr Arg Gln Thr Leu Thr Val Val Gln Asp Trp Leu Thr His  
8855 8860 8865

Pro Asp Thr Thr Gly Thr Arg Leu Val Ile Val Thr Arg His Gly  
8870 8875 8880

Val Ser Thr Ser Ala His Asp Pro Val Pro Asp Leu Ala His Ala  
8885 8890 8895

Ala Val Trp Gly Leu Ile Arg Ser Ala Gln Asn Glu His Pro Gly  
8900 8905 8910

Arg Phe Thr Leu Leu Asp Thr Asp Asp Asn Thr Asn Ser Asp Thr  
8915 8920 8925

Leu Thr Thr Ala Leu Thr Leu Pro Thr Arg Glu Asn Gln Leu Ala  
8930 8935 8940

Ile Arg Arg Asp Thr Ile His Ile Pro Arg Leu Thr Arg Thr Ala  
8945 8950 8955

Val Leu Thr Pro Pro Asp Ser Gly Pro Trp Arg Leu Asp Thr Thr  
8960 8965 8970

Gly Lys Gly Asp Leu Ala Asn Leu Ala Leu Leu Pro Thr Ala His  
 8975 8980 8985  
 Thr Ala Leu Ala Ser Gly Gln Ile Arg Ile Asp Val Arg Ala Ala  
 8990 8995 9000  
 Gly Leu Asn Phe His Asp Val Val Val Ala Leu Gly Leu Ile Pro  
 9005 9010 9015  
 Asp Asp Gly Phe Gly Gly Glu Ala Ala Gly Val Ile Ser Glu Ile  
 9020 9025 9030  
 Gly Pro Asp Val Tyr Gly Phe Ala Val Gly Asp Ala Val Thr Gly  
 9035 9040 9045  
 Met Thr Val Ser Gly Ala Phe Ala Pro Ser Thr Val Ala Asp His  
 9050 9055 9060  
 Arg Met Val Met Thr Ile Pro Ala Arg Trp Ser Phe Pro Gln Ala  
 9065 9070 9075  
 Ala Ser Ile Pro Val Val Phe Leu Thr Ala Tyr Ile Ala Leu Ala  
 9080 9085 9090  
 Glu Ile Ser Gly Leu Ser Arg Gly Gln Arg Val Leu Ile His Ala  
 9095 9100 9105  
 Gly Thr Gly Gly Val Gly Met Ala Ala Ile Gln Leu Ala His His  
 9110 9115 9120  
 Leu Gly Ala Glu Val Phe Ala Thr Ala Ser Ala Ala Lys Trp Ser  
 9125 9130 9135  
 Thr Leu Glu Ala Leu Gly Val Pro Arg Asp His Ile Ala Ser Ser  
 9140 9145 9150  
 Arg Thr Leu Asp Phe Ser Asn Ala Phe Leu Asp Ala Thr Asn Gly  
 9155 9160 9165  
 Ala Gly Val Asp Val Val Leu Asn Cys Leu Ser Gly Glu Phe Val  
 9170 9175 9180  
 Glu Ala Ser Leu Ala Leu Leu Pro Arg Gly Gly His Phe Val Glu  
 9185 9190 9195

Ile Gly Lys Thr Asp Ile Arg Asp Thr Glu Val Ile Ala Ala Thr 9200 9205 9210
His Pro Gly Val Ile Tyr Arg Ala Leu Asp Leu Leu Ser Val Ser 9215 9220 9225
Pro Asp His Ile Gln Arg Thr Leu Ala Gln Leu Ser Pro Leu Phe 9230 9235 9240
Ala Thr Asp Thr Leu Lys Pro Leu Pro Thr Thr Asn Tyr Ser Ile 9245 9250 9255
Tyr Gln Ala Ile Ser Ala Leu Arg Asp Met Ser Gln Ala Arg His 9260 9265 9270
Thr Gly Lys Ile Val Leu Thr Ala Pro Val Val Val Asp Pro Glu 9275 9280 9285
Gly Thr Val Leu Ile Thr Gly Gly Thr Gly Thr Leu Gly Ala Leu 9290 9295 9300
Phe Ala Glu His Leu Val Ser Ala His Gly Val Arg His Leu Leu 9305 9310 9315
Leu Thr Ser Arg Arg Gly Pro Gln Ala His Gly Ala Thr Asp Leu 9320 9325 9330
Gln Gln Arg Leu Thr Asp Leu Gly Ala His Val Thr Ile Thr Ala 9335 9340 9345
Cys Asp Ile Ser Asp Pro Glu Ala Leu Ala Ala Leu Val Asn Ser 9350 9355 9360
Val Pro Thr Gln His Arg Leu Thr Ala Val Val His Thr Ala Ala 9365 9370 9375
Val Leu Ala Asp Thr Pro Val Thr Glu Leu Thr Gly Asp Gln Leu 9380 9385 9390
Asp Gln Val Leu Ala Pro Lys Ile Asp Ala Ala Trp Gln Leu His 9395 9400 9405
Gln Leu Thr Tyr Glu His Asn Leu Ser Ala Phe Ile Met Phe Ser 9410 9415 9420

Ser Met	Ala Gly	Met Ile	Gly	Ser Pro	Gly Gln	Gly	Asn Tyr	Ala	
9425			9430			9435			
Ala Ala	Asn Thr	Ala Leu	Asp	Ala Leu	Ala Asp	Tyr	Arg His	Arg	
9440			9445			9450			
Leu Gly	Leu Pro	Ala Thr	Ser	Leu Ala	Trp Gly	Tyr	Trp Gln	Thr	
9455			9460			9465			
His Thr	Gly Leu	Thr Ala	His	Leu Thr	Asp Val	Asp	Leu Ala	Arg	
9470			9475			9480			
Met Thr	Arg Leu	Gly Leu	Met	Pro Ile	Ala Thr	Ser	His Gly	Leu	
9485			9490			9495			
Ala Leu	Phe Asp	Ala Ala	Leu	Ala Thr	Gly Gln	Pro	Val Ser	Ile	
9500			9505			9510			
Pro Ala	Pro Ile	Asn Thr	His	Thr Leu	Ala Arg	His	Ala Arg	Asp	
9515			9520			9525			
Asn Thr	Leu Ala	Pro Ile	Leu	Ser Ala	Leu Ile	Thr	Thr Pro	Arg	
9530			9535			9540			
Arg Arg	Ala Ala	Ser Ala	Ala	Thr Asp	Leu Ala	Ala	Arg Leu	Asn	
9545			9550			9555			
Gly Leu	Ser Pro	Gln Gln	Gln	Gln Gln	Thr Leu	Ala	Thr Leu	Val	
9560			9565			9570			
Ala Ala	Ala Thr	Ala Thr	Val	Leu Gly	His His	Thr	Pro Glu	Ser	
9575			9580			9585			
Ile Ser	Pro Ala	Thr Ala	Phe	Lys Asp	Leu Gly	Ile	Asp Ser	Leu	
9590			9595			9600			
Thr Ala	Leu Glu	Leu Arg	Asn	Thr Leu	Thr His	Asn	Thr Gly	Leu	
9605			9610			9615			
Asn Leu	Ser Ser	Thr Leu	Ile	Phe Asp	His Pro	Thr	Pro His	Ala	
9620			9625			9630			
Val Ala	Glu His	Leu Leu	Glu	Gln Ile	Pro Gly	Ile	Gly Ala	Leu	
9635			9640			9645			

Val Pro Ala Pro Val Val Ile Ala Ala Gly Arg Thr Glu Glu Pro  
 9650 9655 9660  
 Val Ala Val Val Gly Met Ala Cys Arg Phe Pro Gly Gly Val Ala  
 9665 9670 9675  
 Ser Ala Asp Gln Leu Trp Asp Leu Val Ile Ala Gly Arg Asp Val  
 9680 9685 9690  
 Val Gly Asn Phe Pro Ala Asp Arg Gly Trp Asp Val Glu Gly Leu  
 9695 9700 9705  
 Phe Asp Pro Asp Pro Asp Ala Val Gly Lys Thr Tyr Thr Arg Tyr  
 9710 9715 9720  
 Gly Ala Phe Leu Asp Asp Ala Ala Gly Phe Asp Ala Gly Phe Phe  
 9725 9730 9735  
 Gly Ile Ser Pro Arg Glu Ala Arg Ala Met Asp Pro Gln Gln Arg  
 9740 9745 9750  
 Leu Leu Leu Glu Val Cys Trp Glu Ala Leu Glu Thr Ala Gly Ile  
 9755 9760 9765  
 Pro Ala His Thr Leu Ala Gly Thr Ser Thr Gly Val Phe Val Gly  
 9770 9775 9780  
 Ala Gly Ala Gln Ser Tyr Gly Ala Thr Asn Ser Asp Asp Ala Glu  
 9785 9790 9795  
 Gly Tyr Ala Met Thr Gly Gly Ala Thr Ser Val Met Ser Gly Arg  
 9800 9805 9810  
 Ile Ala Tyr Thr Leu Gly Leu Glu Gly Pro Ala Ile Thr Val Asp  
 9815 9820 9825  
 Thr Ala Cys Ser Ser Ser Leu Val Ala Ile His Leu Ala Cys Gln  
 9830 9835 9840  
 Ser Leu Arg Asn Asn Glu Ser Gln Leu Ala Leu Ala Gly Gly Val  
 9845 9850 9855  
 Thr Val Met Ser Thr Pro Ala Val Phe Thr Glu Phe Ser Arg Gln  
 9860 9865 9870  
 Arg Gly Leu Ala Pro Asp Gly Arg Cys Lys Ala Phe Ala Ala Thr

9875	9880	9885
Ala Asp Gly Thr Gly Phe Gly Glu Gly Ala Ala Val Leu Val Leu 9890 9895 9900		
Glu Arg Leu Ser Glu Ala Arg Arg Asn Asn His Pro Val Leu Ala 9905 9910 9915		
Ile Val Ala Gly Ser Ala Ile Asn Gln Asp Gly Ala Ser Asn Gly 9920 9925 9930		
Leu Thr Ala Pro His Gly Pro Ser Gln Gln Arg Val Ile Asn Gln 9935 9940 9945		
Ala Leu Ala Asn Ala Gly Leu Thr His Asp Gln Val Asp Ala Val 9950 9955 9960		
Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala 9965 9970 9975		
Gly Ala Leu His Ala Thr Tyr Gly His His His Thr Pro Asp Gln 9980 9985 9990		
Pro Leu Trp Leu Gly Ser Ile Lys Ser Asn Ile Gly His Thr Gln 9995 10000 10005		
Ala Ala Ala Gly Ala Ala Gly Val Val Lys Met Ile Gln Ala Ile 10010 10015 10020		
Thr His Ala Thr Leu Pro Ala Thr Leu His Val Asp Gln Pro Ser 10025 10030 10035		
Pro His Ile Asp Trp Ser Ser Gly Thr Val Arg Leu Leu Thr Glu 10040 10045 10050		
Pro Ile Gln Trp Pro Asn Thr Asp His Pro Arg Thr Ala Ala Val 10055 10060 10065		
Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala His Leu Ile Leu Gln 10070 10075 10080		
Gln Pro Pro Thr Pro Asn Pro Thr Gln Thr Pro Glu Asp Cys Ser 10085 10090 10095		
Pro Ala Gln Ser Pro Cys Ala Thr Ile Thr Asp Ala Gly Thr Gly 10100 10105 10110		

Leu Ser 10115	Phe Val Pro Trp Val 10120	Ile Ser Ala Lys Ser 10125	Ala Glu Ala
Leu Ser 10130	Ala Gln Ala Ser Arg 10135	Leu Leu Thr Arg Leu 10140	Asp Asp Asp
Pro Val 10145	Val Asp Ala Ile Asp 10150	Leu Gly Trp Ser Leu 10155	Ile Ala Thr
Arg Ser 10160	Met Phe Glu His Arg 10165	Ala Val Val Val Gly 10170	Ala Asp Arg
His Gln 10175	Leu Gln Arg Gly Leu 10180	Ala Glu Leu Ala Ser 10185	Gly Asn Leu
Gly Ala 10190	Asp Val Val Val Gly 10195	Arg Ala Arg Ala Ala 10200	Gly Glu Thr
Val Met 10205	Val Phe Pro Gly Gln 10210	Gly Ser Gln Arg Leu 10215	Gly Met Gly
Ala Gln 10220	Leu Tyr Glu Gln Phe 10225	Pro Val Phe Ala Ala 10230	Ala Phe Asp
Asp Val 10235	Val Asp Ala Leu Asp 10240	Gln Tyr Leu Arg Leu 10245	Pro Leu Arg
Gln Val 10250	Met Trp Gly Asp Asp 10255	Glu Gly Leu Leu Asn 10260	Ser Thr Glu
Phe Ala 10265	Gln Pro Ser Leu Phe 10270	Ala Val Glu Val Ala 10275	Leu Phe Ala
Leu Leu 10280	Arg Phe Trp Gly Val 10285	Val Pro Asp Tyr Val 10290	Ile Gly His
Ser Val 10295	Gly Glu Leu Ala Ala 10300	Ala Gln Val Ala Gly 10305	Val Leu Ser
Leu Gln 10310	Asp Ala Ala Lys Leu 10315	Val Ser Ala Arg Gly 10320	Arg Leu Met
Gln Ala 10325	Leu Pro Ala Gly Gly 10330	Ala Met Val Ala Val 10335	Ala Ala Ser



Gln His 10340	Glu Val Glu Pro Leu 10345	Leu Val Glu Gly Val 10350	Asp Ile Ala
Ala Leu 10355	Asn Ala Pro Gly Ser 10360	Val Val Ile Ser Gly 10365	Asp Gln Ala
Ala Val 10370	Arg Leu Ile Ala Asn 10375	Arg Leu Ala Asp Arg 10380	Gly Tyr Arg
Ala His 10385	Glu Leu Ala Val Ser 10390	His Ala Phe His Ser 10395	Ser Leu Met
Glu Pro 10400	Met Leu Glu Glu Phe 10405	Ala Arg Leu Ala Ser 10410	Glu Ile Val
Val Glu 10415	Gln Pro Gln Ile Pro 10420	Leu Ile Ser Asn Val 10425	Thr Gly Gln
Leu Ala 10430	Asn Ala Asp Tyr Gly 10435	Ser Ala Gly Tyr Trp 10440	Val Asp His
Ile Arg 10445	Arg Pro Val Arg Phe 10450	Ala Asp Ser Val Ala 10455	Ser Leu Glu
Ala Met 10460	Gly Ala Ser Cys Phe 10465	Ile Glu Val Gly Pro 10470	Ala Ser Gly
Leu Gly 10475	Ala Ala Ile Glu Gln 10480	Ser Leu Lys Ser Ala 10485	Glu Pro Thr
Val Ser 10490	Val Ser Ala Leu Ser 10495	Thr Asp Lys Pro Glu 10500	Ser Val Ala
Val Leu 10505	Arg Ala Ala Ala Arg 10510	Leu Ser Thr Ser Gly 10515	Ile Pro Val
Asp Trp 10520	Gln Ser Val Phe Asp 10525	Gly Arg Ser Thr Gln 10530	Thr Val Asn
Leu Pro 10535	Thr Tyr Ala Phe Gln 10540	Arg Gln Arg Phe Trp 10545	Leu Asp Ala
Asn Arg 10550	Ile Gly Gln Gly Asp 10555	Pro Ala Ser Gln Pro 10560	Gln Ala Gln

Asn Val 10565	Glu Ser Arg Phe Trp 10570	Glu Ala Val Glu Arg 10575	Glu Asp Val
Asp Gly 10580	Leu Ala Asp Ser Ile 10585	Gly Val Thr Ala Ser 10590	Ala Met Gln
Thr Val 10595	Leu Pro Ala Leu Ser 10600	Ser Trp Arg Arg Ala 10605	Glu Arg Thr
Gln Ser 10610	Glu Leu Asp Ser Trp 10615	Arg Tyr Gln Val Thr 10620	Trp Leu Ser
Ser Pro 10625	Ala Thr Pro Ser Ser 10630	Ile Thr Leu Ser Gly 10635	Ile Trp Leu
Leu Ile 10640	Val Pro Ser Glu Leu 10645	Ala Lys Thr Asp Pro 10650	Val Ile Gly
Cys Ala 10655	Ala Ala Leu Glu Ala 10660	His Gly Ala Leu Val 10665	Thr Ile Ile
Thr Ile 10670	Phe Glu Pro Asp Phe 10675	Asn Arg Ser Leu Met 10680	Gly Ala Ser
Leu Lys 10685	Asp Ile Gly Ser His 10690	Ile Ser Gly Val Ile 10695	Ser Phe Leu
Gly Ile 10700	His Gly Ser Glu Phe 10705	Ser Asp Ser Gly Ala 10710	Val Lys Thr
Leu Asn 10715	Leu Val Gln Ala Met 10720	Gly Asp Val His Leu 10725	Asp Val Pro
Leu Trp 10730	Cys Leu Thr Gln Gly 10735	Ala Val Ser Ile Ser 10740	Ala Asp Asp
Leu Ile 10745	Arg Cys Ser Ser Ala 10750	Ala Leu Val Trp Gly 10755	Leu Gly Arg
Val Val 10760	Ala Leu Glu His Pro 10765	Gly Ser Trp Gly Gly 10770	Leu Val Asp
Leu Pro 10775	Glu Ser Pro Asp Asp 10780	Ala Ala Trp Glu Arg 10785	Leu Cys Ala

Leu	Leu	Ala	Gln	Pro	Thr	Asp	Glu	Asp	Gln	Phe	Ala	Ile	Arg	Pro
10790						10795					10800			
Ser	Gly	Val	Phe	Leu	Arg	Arg	Leu	Ile	His	Ala	Pro	Ala	Thr	Thr
10805						10810					10815			
Thr	Ser	Lys	Ser	Ser	Thr	Ala	Trp	Ala	Pro	Arg	Gly	Thr	Val	Leu
10820						10825					10830			
Ile	Thr	Gly	Gly	Thr	Gly	Ala	Leu	Gly	Ala	His	Val	Ala	Arg	Trp
10835						10840					10845			
Leu	Ala	His	Lys	Tyr	Glu	Ser	Val	Asp	Leu	Leu	Leu	Thr	Ser	Arg
10850						10855					10860			
Arg	Gly	Met	Ala	Ala	Asp	Gly	Ala	Thr	Glu	Leu	Val	Asp	Asp	Leu
10865						10870					10875			
Arg	Thr	Ala	Gly	Ala	Ser	Val	Thr	Val	His	Ala	Cys	Asp	Val	Thr
10880						10885					10890			
Asp	Arg	Thr	Ser	Val	Glu	Ala	Ala	Ile	Ala	Gly	Lys	Ser	Leu	Asp
10895						10900					10905			
Ala	Val	Phe	His	Leu	Ala	Gly	Arg	His	Gln	Pro	Thr	Leu	Leu	Thr
10910						10915					10920			
Glu	Leu	Glu	Asp	Glu	Ser	Phe	Ser	Asp	Glu	Leu	Ala	Pro	Lys	Val
10925						10930					10935			
His	Gly	Ala	Gln	Val	Leu	Ser	Asp	Ile	Thr	Ser	Asn	Leu	Thr	Leu
10940						10945					10950			
Ser	Ala	Phe	Val	Met	Phe	Ser	Ser	Val	Ala	Gly	Ile	Trp	Gly	Gly
10955						10960					10965			
Lys	Ser	Gln	Gly	Ala	Tyr	Ala	Ala	Ala	Asn	Ala	Phe	Leu	Asp	Ser
10970						10975					10980			
Leu	Ala	Glu	Lys	Arg	Arg	Thr	Leu	Gly	Leu	Pro	Ala	Thr	Ser	Val
10985						10990					10995			
Ala	Trp	Gly	Leu	Trp	Ala	Gly	Gly	Gly	Met	Gly	Asp	Arg	Pro	Ser
11000						11005					11010			

Ala Ser	Gly Leu Asn Leu Ile	Gly Leu Lys Ser Met	Ser Ala Asp
11015	11020	11025	
Leu Ala	Val Gln Ala Leu Ser	Asp Ala Ile Asp Arg	Pro Gln Ala
11030	11035	11040	
Thr Leu	Thr Val Ala Ser Val	Asn Trp Asp Arg Phe	Tyr Pro Thr
11045	11050	11055	
Phe Ala	Leu Ala Arg Pro Arg	Pro Phe Leu His Glu	Ile Thr Glu
11060	11065	11070	
Val Met	Ala Tyr Arg Glu Ser	Met Arg Ser Ser Ser	Ala Ser Thr
11075	11080	11085	
Ala Thr	Leu Leu Thr Ser Lys	Leu Ala Gly Leu Thr	Ala Thr Glu
11090	11095	11100	
Gln Arg	Ala Val Thr Arg Lys	Leu Val Leu Asp Gln	Ala Ala Ser
11105	11110	11115	
Val Leu	Gly Tyr Ala Ser Thr	Glu Ser Leu Asp Thr	His Glu Ser
11120	11125	11130	
Phe Lys	Asp Leu Gly Phe Asp	Ser Leu Thr Ala Leu	Glu Leu Arg
11135	11140	11145	
Asp His	Leu Gln Thr Ala Thr	Gly Leu Asn Leu Ser	Ser Thr Leu
11150	11155	11160	
Ile Phe	Asp His Pro Thr Pro	His Ala Val Ala Glu	His Leu Leu
11165	11170	11175	
Glu Gln	Ile Pro Gly Ile Gly	Ala Leu Val Pro Ala	Pro Val Val
11180	11185	11190	
Ile Ala	Ala Gly Arg Thr Glu	Glu Pro Val Ala Val	Val Gly Met
11195	11200	11205	
Ala Cys	Arg Phe Pro Gly Gly	Val Ala Ser Ala Asp	Gln Leu Trp
11210	11215	11220	
Asp Leu	Val Ile Ala Gly Arg	Asp Val Val Gly Asn	Phe Pro Ala
11225	11230	11235	

Asp Arg	Gly Trp Asp Val	Glu	Gly Leu Phe Asp	Pro	Asp Pro Asp
11240		11245		11250	
Ala Val	Gly Lys Thr Tyr	Thr	Arg Tyr Gly Ala	Phe	Leu Asp Asp
11255		11260		11265	
Ala Ala	Gly Phe Asp Ala	Gly	Phe Phe Gly Ile	Ser	Pro Arg Glu
11270		11275		11280	
Ala Arg	Ala Met Asp Pro	Gln	Gln Arg Leu Leu	Leu	Glu Val Cys
11285		11290		11295	
Trp Glu	Ala Leu Glu Thr	Ala	Gly Ile Pro Ala	His	Thr Leu Ala
11300		11305		11310	
Gly Thr	Ser Thr Gly Val	Phe	Ala Gly Ala Trp	Ala	Gln Ser Tyr
11315		11320		11325	
Gly Ala	Thr Asn Ser Asp	Asp	Ala Glu Gly Tyr	Ala	Met Thr Gly
11330		11335		11340	
Gly Ser	Thr Ser Val Met	Ser	Gly Arg Ile Ala	Tyr	Thr Leu Gly
11345		11350		11355	
Leu Glu	Gly Pro Ala Ile	Thr	Val Asp Thr Ala	Cys	Ser Ser Ser
11360		11365		11370	
Leu Val	Ala Ile His Leu	Ala	Cys Gln Ser Leu	Arg	Asn Asn Glu
11375		11380		11385	
Ser Gln	Leu Ala Leu Ala	Gly	Gly Val Thr Val	Met	Ser Thr Pro
11390		11395		11400	
Ala Ile	Phe Thr Glu Phe	Ser	Arg Gln Arg Gly	Leu	Ala Pro Asp
11405		11410		11415	
Gly Arg	Cys Lys Ala Phe	Ala	Ala Thr Ala Asp	Gly	Thr Gly Phe
11420		11425		11430	
Gly Glu	Gly Ala Ala Val	Leu	Val Leu Glu Arg	Leu	Ser Glu Ala
11435		11440		11445	
Arg Arg	Asn Asn His Pro	Val	Leu Ala Ile Val	Ala	Gly Ser Ala
11450		11455		11460	

Ile Asn	Gln Asp Gly Ala Ser	Asn Gly Leu Thr Ala	Pro His Gly
11465	11470	11475	
Pro Ser	Gln Gln Arg Val Ile	Asn Gln Ala Leu Ala	Asn Ala Gly
11480	11485	11490	
Leu Thr	His Asp Gln Val Asp	Ala Val Glu Ala His	Gly Thr Gly
11495	11500	11505	
Thr Thr	Leu Gly Asp Pro Ile	Glu Ala Ser Ala Leu	His Ala Thr
11510	11515	11520	
Tyr Gly	His His His Thr Pro	Asp Gln Pro Leu Trp	Leu Gly Ser
11525	11530	11535	
Ile Lys	Ser Asn Ile Gly His	Thr Gln Ala Ala Ala	Gly Ala Ala
11540	11545	11550	
Gly Val	Val Lys Met Ile Gln	Ala Ile Thr His Ala	Thr Leu Pro
11555	11560	11565	
Ala Thr	Leu His Val Asp Gln	Pro Ser Pro His Ile	Asp Trp Ser
11570	11575	11580	
Ser Gly	Thr Val Arg Leu Leu	Thr Glu Pro Ile Gln	Trp Pro Asn
11585	11590	11595	
Thr Asp	His Pro Arg Thr Ala	Ala Val Ser Ser Phe	Gly Ile Ser
11600	11605	11610	
Gly Thr	Asn Ala His Leu Ile	Leu Gln Gln Pro Pro	Thr Pro Asp
11615	11620	11625	
Thr Thr	Gln Thr Pro Asn Thr	Thr Thr Gly Ser Asp	Pro Ala Val
11630	11635	11640	
Gly Ser	Asp Pro Ala Val Gly	Val Leu Val Trp Pro	Leu Ser Ala
11645	11650	11655	
Arg Ser	Ala Pro Gly Leu Ser	Ala Gln Ala Ala Arg	Leu Tyr Gln
11660	11665	11670	
His Leu	Ser Ala His Pro Asp	Leu Asp Pro Ile Asp	Val Ala His
11675	11680	11685	

Ser Leu 11690	Ala Thr Thr Arg Ser 11695	His His Pro His Arg 11700	Ala Thr Ile
Thr Thr 11705	Ser Ile Glu His His 11710	Ser Glu Asn Asn His 11715	Asp Thr Thr
Asp Ala 11720	Leu Ala Ala Leu His 11725	Ala Leu Ala Asn Asn 11730	Gly Thr His
Pro Leu 11735	Leu Ser Arg Gly Leu 11740	Leu Thr Pro Gln Gly 11745	Pro Gly Lys
Thr Val 11750	Phe Val Phe Pro Gly 11755	Gln Gly Ser Gln Tyr 11760	Pro Gly Met
Gly Ala 11765	Asp Leu Tyr Arg Gln 11770	Phe Pro Val Phe Ala 11775	His Ala Leu
Asp Ala 11780	Cys Asp Ala Ala Leu 11785	Gln Pro Phe Thr Gly 11790	Trp Ser Val
Leu Ala 11795	Val Leu His Asp Glu 11800	Pro Glu Ala Pro Ser 11805	Leu Glu Arg
Val Asp 11810	Val Val Gln Pro Val 11815	Leu Phe Ser Val Met 11820	Val Ser Leu
Ala Ala 11825	Leu Trp Arg Trp Ala 11830	Gly Ile Thr Pro Asp 11835	Ala Val Ile
Gly His 11840	Ser Gln Gly Glu Ile 11845	Ala Ala Ala His Val 11850	Ala Gly Ala
Leu Thr 11855	Leu Pro Glu Ala Ala 11860	Ala Val Val Ala Leu 11865	Arg Ser Arg
Val Leu 11870	Thr Asp Leu Ala Gly 11875	Ala Gly Ala Met Ala 11880	Ser Val Leu
Ser Pro 11885	Glu Glu Pro Leu Thr 11890	Gln Leu Leu Ala Arg 11895	Trp Asp Gly
Lys Ile 11900	Thr Val Ala Ala Val 11905	Asn Gly Pro Ala Ser 11910	Ala Val Val

Ser Gly 11915	Asp Thr Thr Ala 11920	Ile Thr Glu Leu Leu 11925	Ile Thr Cys Glu
His Glu 11930	Asn Ile Asp Ala 11935	Arg Ala Ile Pro Val 11940	Asp Tyr Pro Ser
His Ser 11945	Pro Tyr Met Glu 11950	His Ile Arg His Gln 11955	Phe Leu Asp Glu
Leu Pro 11960	Glu Leu Thr Pro 11965	Arg Pro Ser Thr Ile 11970	Ala Met Tyr Ser
Thr Val 11975	Asp Gly Glu Pro 11980	His Asp Thr Ala Tyr 11985	Asp Thr Thr Thr
Met Thr 11990	Ala Asp Tyr Trp 11995	Tyr Arg Asn Ile Arg 12000	Asn Thr Val Arg
Phe His 12005	Asp Thr Val Ala 12010	Ala Leu Leu Gly Ala 12015	Gly Glu Gln Val
Phe Leu 12020	Glu Leu Ser Pro 12025	His Pro Val Leu Thr 12030	Gln Ala Ile Thr
Asp Thr 12035	Val Glu Gln Ala 12040	Gly Gly Gly Ala 12045	Ala Val Pro Ala
Leu Arg 12050	Lys Asp Arg Pro 12055	Asp Ala Val Ala Phe 12060	Ala Ala Leu
Gly Gln 12065	Leu His Cys His 12070	Gly Ile Ser Pro Ser 12075	Trp Asn Val Leu
Tyr Cys 12080	Gln Ala Arg Pro 12085	Leu Thr Leu Pro Thr 12090	Tyr Ala Phe Gln
His Gln 12095	Arg Tyr Trp Leu 12100	Leu Pro Thr Ala Gly 12105	Asp Phe Ser Gly
Ala Asn 12110	Thr His Ala Met 12115	His Pro Leu Leu Asp 12120	Thr Ala Thr Glu
Leu Ala 12125	Glu Asn Arg Gly 12130	Trp Val Phe Thr Gly 12135	Arg Ile Ser Pro
Arg Thr	Gln Pro Trp Leu Asn	Glu His Ala Val Glu	Ser Ala Val



12140		12145		12150
Leu Phe Pro Gly Thr Gly Phe Val Glu Leu Ala Leu His Val Ala 12155 12160 12165				
Asp Arg Ala Gly Tyr Ser Ser Val Asn Glu Leu Ile Val His Thr 12170 12175 12180				
Pro Leu Leu Leu Ala Gly His Asp Thr Ala Asp Leu Gln Ile Thr 12185 12190 12195				
Val Thr Asp Thr Asp Asp Met Gly Arg Gln Ser Leu Asn Ile His 12200 12205 12210				
Ser His Pro His Ile Gly His Asp Asn Thr Thr Thr Gly Asp Glu 12215 12220 12225				
Gln Pro Glu Trp Val Leu His Ala Ser Ala Val Leu Thr Ala Gln 12230 12235 12240				
Thr Thr Asp His Asn His Leu Pro Leu Thr Pro Val Pro Trp Pro 12245 12250 12255				
Pro Pro Gly Thr Ala Ala Ile Glu Val Asp Asp Phe Tyr Asp Asp 12260 12265 12270				
Leu Ala Ala Gln Gly Tyr Asn Tyr Gly Pro Thr Phe Gln Gly Val 12275 12280 12285				
Gln Arg Ile Trp Arg Asp His Ala Thr Pro Asp Val Ile Tyr Ala 12290 12295 12300				
Glu Val Glu Leu Pro Glu Asp Thr Asp Ile Asp Gly Tyr Gly Ile 12305 12310 12315				
His Pro Ala Leu Phe Asp Ala Ala Leu His Pro Leu Leu Ala Leu 12320 12325 12330				
Thr Gln Pro Pro Thr Asn Asp Thr Asp Asp Thr Asn Thr Ala Asp 12335 12340 12345				
Thr Gly Asp Gln Val Arg Leu Pro Tyr Ala Phe Thr Gly Ile Ser 12350 12355 12360				
Leu His Ala Thr His Ala Thr Arg Leu Arg Val Arg Leu Thr Arg 12365 12370 12375				

Thr Gly 12380	Ala Asp Ala Ile Thr 12385	Val His Thr Ser Asp 12390	Thr Thr Gly
Ala Pro 12395	Val Ala Ile Ile Asp 12400	Ser Leu Ile Thr Arg 12405	Pro Leu Thr
Thr Ala 12410	Thr Gly Ser Ala Pro 12415	Ala Thr Thr Ala Ala 12420	Gly Leu Leu
His Leu 12425	Ser Trp Pro Pro His 12430	Pro Asp Thr Thr Thr 12435	Asp Thr Asp
Thr Asp 12440	Thr Asp Ala Leu Arg 12445	Tyr Gln Val Ile Ala 12450	Glu Pro Thr
Gln Gln 12455	Leu Pro Arg Tyr Leu 12460	His Asp Leu His Thr 12465	Ser Thr Thr
Glu Ala 12470	Asp Val Val Val Trp 12475	Pro Val Pro Val Pro 12480	Ser Asn Glu
Glu Leu 12485	Gln Ala His Gln Ala 12490	Ser Asp Thr Ala Val 12495	Ser Ser Arg
Ile His 12500	Thr Leu Thr Arg Gln 12505	Thr Leu Thr Val Val 12510	Gln Asp Trp
Leu Thr 12515	His Pro Asp Thr Thr 12520	Gly Thr Arg Leu Val 12525	Ile Val Thr
Arg His 12530	Gly Val Ser Thr Ser 12535	Ala His Asp Pro Val 12540	Pro Asp Leu
Ala His 12545	Ala Ala Val Trp Gly 12550	Leu Ile Arg Ser Ala 12555	Gln Asn Glu
His Pro 12560	Gly Arg Phe Thr Leu 12565	Leu Asp Thr Asp Asp 12570	Asn Thr Asn
Ser Asp 12575	Thr Leu Thr Thr Ala 12580	Leu Thr Leu Pro Thr 12585	Arg Glu Asn

Gln Leu 12590	Ala Ile Arg Arg Asp 12595	Thr Ile His Ile Pro 12600	Arg Leu Thr
Arg His 12605	Ser Ser Asp Gly Ala 12610	Leu Thr Ala Pro Val 12615	Val Val Asp
Pro Glu 12620	Gly Thr Val Leu Ile 12625	Thr Gly Gly Thr Gly 12630	Thr Leu Gly
Ala Leu 12635	Phe Ala Glu His Leu 12640	Val Ser Ala His Gly 12645	Val Arg His
Leu Leu 12650	Leu Thr Ser Arg Arg 12655	Gly Pro Gln Ala His 12660	Gly Ala Thr
Asp Leu 12665	Gln Gln Arg Leu Thr 12670	Asp Leu Gly Ala His 12675	Val Thr Ile
Thr Ala 12680	Cys Asp Ile Ser Asp 12685	Pro Glu Ala Leu Ala 12690	Ala Leu Val
Asn Ser 12695	Val Pro Thr Gln His 12700	Arg Leu Thr Ala Val 12705	Val His Thr
Ala Ala 12710	Val Leu Ala Asp Thr 12715	Pro Val Thr Glu Leu 12720	Thr Gly Asp
Gln Leu 12725	Asp Gln Val Leu Ala 12730	Pro Lys Ile Asp Ala 12735	Ala Trp Gln
Leu His 12740	Gln Leu Thr Tyr Glu 12745	His Asn Leu Ser Ala 12750	Phe Ile Met
Phe Ser 12755	Ser Met Ala Gly Met 12760	Ile Gly Ser Pro Gly 12765	Gln Gly Asn
Tyr Ala 12770	Ala Ala Asn Thr Ala 12775	Leu Asp Ala Leu Ala 12780	Asp Tyr Arg
His Arg 12785	Leu Gly Leu Pro Ala 12790	Thr Ser Leu Ala Trp 12795	Gly Tyr Trp
Gln Thr 12800	His Thr Gly Leu Thr 12805	Ala His Leu Thr Asp 12810	Val Asp Leu
Ala Arg	Met Thr Arg Leu Gly	Leu Met Pro Ile Ala	Thr Ser His

12815		12820		12825
Gly Leu Ala Leu Phe Asp Ala Ala Leu Ala Thr Gly Gln Pro Val 12830 12835 12840				
Ser Ile Pro Ala Pro Ile Asn Thr His Thr Leu Ala Arg His Ala 12845 12850 12855				
Arg Asp Asn Thr Leu Ala Pro Ile Leu Ser Ala Leu Ile Thr Thr 12860 12865 12870				
Pro Arg Arg Arg Ala Ala Ser Ala Ala Thr Asp Leu Ala Ala Arg 12875 12880 12885				
Leu Asn Gly Leu Ser Pro Gln Gln Gln Gln Thr Leu Ala Thr 12890 12895 12900				
Leu Val Ala Ala Ala Thr Ala Thr Val Leu Gly His His Thr Pro 12905 12910 12915				
Glu Ser Ile Ser Pro Ala Thr Ala Phe Lys Asp Leu Gly Ile Asp 12920 12925 12930				
Ser Leu Thr Ala Leu Glu Leu Arg Asn Thr Leu Thr His Asn Thr 12935 12940 12945				
Gly Leu Asp Leu Pro Pro Thr Leu Ile Phe Asp His Pro Thr Pro 12950 12955 12960				
His Ala Val Ala Glu His Leu Leu Glu Gln Ile Pro Gly Ile Gly 12965 12970 12975				
Ala Leu Val Pro Ala Pro Val Val Ile Ala Ala Gly Arg Thr Glu 12980 12985 12990				
Glu Pro Val Ala Val Val Gly Met Ala Cys Arg Phe Pro Gly Gly 12995 13000 13005				
Val Ala Ser Ala Asp Gln Leu Trp Asp Leu Val Ile Ala Gly Arg 13010 13015 13020				
Asp Val Val Gly Asn Phe Pro Ala Asp Arg Gly Trp Asp Val Glu 13025 13030 13035				
Gly Leu Phe Asp Pro Asp Pro Asp Ala Val Gly Lys Thr Tyr Thr 13040 13045 13050				

Arg Tyr 13055	Gly Ala Phe Leu Asp 13060	Asp Ala Ala Gly Phe 13065	Asp Ala Gly
Phe Phe 13070	Gly Ile Ser Pro Arg 13075	Glu Ala Arg Ala Met 13080	Asp Pro Gln
Gln Arg 13085	Leu Leu Leu Glu Val 13090	Cys Trp Glu Ala Leu 13095	Glu Thr Ala
Gly Ile 13100	Pro Ala His Thr Leu 13105	Ala Gly Thr Ser Thr 13110	Gly Val Phe
Ala Gly 13115	Ala Trp Ala Gln Ser 13120	Tyr Gly Ala Thr Asn 13125	Ser Asp Asp
Ala Glu 13130	Gly Tyr Ala Met Thr 13135	Gly Gly Ser Thr Ser 13140	Val Met Ser
Gly Arg 13145	Ile Ala Tyr Thr Leu 13150	Gly Leu Glu Gly Pro 13155	Ala Ile Thr
Val Asp 13160	Thr Ala Cys Ser Ser 13165	Ser Leu Val Ala Ile 13170	His Leu Ala
Cys Gln 13175	Ser Leu Arg Asn Asn 13180	Glu Ser Gln Leu Ala 13185	Leu Ala Gly
Gly Val 13190	Thr Val Met Ser Thr 13195	Pro Ala Val Phe Thr 13200	Glu Phe Ser
Arg Gln 13205	Arg Gly Leu Ala Pro 13210	Asp Gly Arg Cys Lys 13215	Ala Phe Ala
Ala Thr 13220	Ala Asp Gly Thr Gly 13225	Phe Gly Glu Gly Ala 13230	Ala Val Leu
Val Leu 13235	Glu Arg Leu Ser Glu 13240	Ala Arg Arg Asn Asn 13245	His Pro Val
Leu Ala 13250	Ile Val Ala Gly Ser 13255	Ala Ile Asn Gln Asp 13260	Gly Ala Ser
Asn Gly 13265	Leu Thr Ala Pro His 13270	Gly Pro Ser Gln Gln 13275	Arg Val Ile

Asn Gln 13280	Ala Leu Ala Asn Ala 13285	Gly Leu Thr His Asp 13290	Gln Val Asp
Ala Val 13295	Glu Ala His Gly Thr 13300	Gly Thr Thr Leu Gly 13305	Asp Pro Ile
Glu Ala 13310	Ser Ala Leu His Ala 13315	Thr Tyr Gly His His 13320	His Thr Pro
Asp Gln 13325	Pro Leu Trp Leu Gly 13330	Ser Ile Lys Ser Asn 13335	Ile Gly His
Thr Gln 13340	Ala Ala Ala Gly Ala 13345	Ala Gly Val Val Lys 13350	Met Ile Gln
Ala Ile 13355	Thr His Ala Thr Leu 13360	Pro Ala Thr Leu His 13365	Val Asp Gln
Pro Ser 13370	Pro His Ile Asp Trp 13375	Ser Ser Gly Thr Val 13380	Arg Leu Leu
Thr Glu 13385	Pro Ile Gln Trp Pro 13390	Asn Thr Asp His Pro 13395	Arg Thr Ala
Ala Val 13400	Ser Ser Phe Gly Ile 13405	Ser Gly Thr Asn Ala 13410	His Leu Ile
Leu Gln 13415	Gln Pro Pro Thr Pro 13420	Asp Thr Thr Gln Thr 13425	Pro Asn Thr
Thr Thr 13430	Gly Ser Asp Pro Ala 13435	Val Gly Ser Asp Pro 13440	Ala Val Gly
Val Leu 13445	Val Trp Pro Leu Ser 13450	Ala Arg Ser Ala Pro 13455	Gly Leu Ser
Ala Gln 13460	Ala Ala Arg Leu Tyr 13465	Gln His Leu Ser Ala 13470	His Pro Asp
Leu Asp 13475	Pro Ile Asp Val Ala 13480	His Ser Leu Ala Thr 13485	Thr Arg Ser
His His 13490	Pro His Arg Ala Thr 13495	Ile Thr Thr Ser Ile 13500	Glu His His

Ser	Glu	Asn	Asn	His	Asp	Thr	Thr	Asp	Ala	Leu	Ala	Ala	Leu	His
13505						13510					13515			
Ala	Leu	Ala	Asn	Asn	Gly	Thr	His	Pro	Leu	Leu	Ser	Arg	Gly	Leu
13520						13525					13530			
Leu	Thr	Pro	Gln	Gly	Pro	Gly	Lys	Thr	Val	Phe	Val	Phe	Pro	Gly
13535						13540					13545			
Gln	Gly	Ser	Gln	Tyr	Pro	Gly	Met	Gly	Ala	Asp	Leu	Tyr	Arg	Gln
13550						13555					13560			
Phe	Pro	Val	Phe	Ala	His	Ala	Leu	Asp	Ala	Cys	Asp	Ala	Ala	Leu
13565						13570					13575			
Gln	Pro	Phe	Thr	Gly	Trp	Ser	Val	Leu	Ala	Val	Leu	His	Asp	Glu
13580						13585					13590			
Pro	Glu	Ala	Pro	Ser	Leu	Glu	Arg	Val	Asp	Val	Val	Gln	Pro	Val
13595						13600					13605			
Leu	Phe	Ser	Val	Met	Val	Ser	Leu	Ala	Ala	Leu	Trp	Arg	Trp	Ala
13610						13615					13620			
Gly	Ile	Thr	Pro	Asp	Ala	Val	Ile	Gly	His	Ser	Gln	Gly	Glu	Ile
13625						13630					13635			
Ala	Ala	Ala	His	Val	Ala	Gly	Ala	Leu	Thr	Leu	Pro	Glu	Ala	Ala
13640						13645					13650			
Ala	Val	Val	Ala	Leu	Arg	Ser	Arg	Val	Leu	Thr	Asp	Leu	Ala	Gly
13655						13660					13665			
Ala	Gly	Ala	Met	Ala	Ser	Val	Leu	Ser	Pro	Glu	Glu	Pro	Leu	Thr
13670						13675					13680			
Gln	Leu	Leu	Ala	Arg	Trp	Asp	Gly	Lys	Ile	Thr	Val	Ala	Ala	Val
13685						13690					13695			
Asn	Gly	Pro	Ala	Ser	Ala	Val	Val	Ser	Gly	Asp	Thr	Thr	Ala	Ile
13700						13705					13710			
Thr	Glu	Leu	Leu	Ile	Thr	Cys	Glu	His	Glu	Asn	Ile	Asp	Ala	Arg
13715						13720					13725			

Ala Ile	Pro Val Asp Tyr	Pro	Ser His Ser Pro Tyr	Met Glu His
13730		13735		13740
Ile Arg	His Gln Phe Leu Asp	Glu Leu Pro Glu Leu	Thr Pro Arg	
13745		13750		13755
Pro Ser	Thr Ile Ala Met Tyr	Ser Thr Val Asp Gly	Glu Pro His	
13760		13765		13770
Asp Thr	Ala Tyr Asp Thr Thr	Thr Met Thr Ala Asp	Tyr Trp Tyr	
13775		13780		13785
Arg Asn	Ile Arg Asn Thr Val	Arg Phe His Asp Thr	Val Ala Ala	
13790		13795		13800
Leu Leu	Gly Ala Gly Glu Gln	Val Phe Leu Glu Leu	Ser Pro His	
13805		13810		13815
Pro Val	Leu Thr Gln Ala Ile	Thr Asp Thr Val Glu	Gln Ala Gly	
13820		13825		13830
Gly Gly	Gly Ala Ala Val Pro	Ala Leu Arg Lys Asp	Arg Pro Asp	
13835		13840		13845
Ala Val	Ala Phe Ala Ala Ala	Leu Gly Gln Leu His	Cys His Gly	
13850		13855		13860
Ile Ser	Pro Ser Trp Asn Val	Leu Tyr Cys Gln Ala	Arg Pro Leu	
13865		13870		13875
Thr Leu	Pro Thr Tyr Ala Phe	Gln His Gln Arg Tyr	Trp Leu Leu	
13880		13885		13890
Pro Thr	Ala Gly Asp Phe Ser	Gly Ala Asn Thr His	Ala Met His	
13895		13900		13905
Pro Leu	Leu Asp Thr Ala Thr	Glu Leu Ala Glu Asn	Arg Gly Trp	
13910		13915		13920
Val Phe	Thr Gly Arg Ile Ser	Pro Arg Thr Gln Pro	Trp Leu Asn	
13925		13930		13935
Glu His	Ala Val Glu Ser Ala	Val Leu Phe Pro Gly	Thr Gly Phe	
13940		13945		13950



Val Glu	Leu Ala	Leu His	Val	Ala Asp	Arg Ala	Gly	Tyr Ser	Ser
13955			13960			13965		
Val Asn	Glu Leu	Ile Val	His	Thr Pro	Leu Leu	Leu	Ala Gly	His
13970			13975			13980		
Asp Thr	Ala Asp	Leu Gln	Ile	Thr Val	Thr Asp	Thr	Asp Asp	Met
13985			13990			13995		
Gly Arg	Gln Ser	Leu Asn	Ile	His Ser	Arg Pro	His	Ile Gly	His
14000			14005			14010		
Asp Asn	Thr Thr	Thr Gly	Asp	Glu Gln	Pro Glu	Trp	Val Leu	His
14015			14020			14025		
Ala Ser	Ala Val	Leu Thr	Ala	Gln Thr	Thr Asp	His	Asn His	Leu
14030			14035			14040		
Pro Leu	Thr Pro	Val Pro	Trp	Pro Pro	Pro Gly	Thr	Ala Ala	Ile
14045			14050			14055		
Glu Val	Asp Asp	Phe Tyr	Asp	Asp Leu	Ala Ala	Gln	Gly Tyr	Asn
14060			14065			14070		
Tyr Gly	Pro Thr	Phe Gln	Gly	Val Gln	Arg Ile	Trp	Arg Asp	His
14075			14080			14085		
Ala Thr	Pro Asp	Val Ile	Tyr	Ala Glu	Val Glu	Leu	Pro Glu	Asp
14090			14095			14100		
Thr Asp	Ile Asp	Gly Tyr	Gly	Ile His	Pro Ala	Leu	Phe Asp	Ala
14105			14110			14115		
Ala Leu	His Pro	Leu Leu	Ala	Leu Thr	Gln Pro	Pro	Thr Asn	Asp
14120			14125			14130		
Thr Asp	Asp Thr	Asn Thr	Ala	Asp Thr	Gly Asp	Gln	Val Arg	Leu
14135			14140			14145		
Pro Tyr	Ala Phe	Thr Gly	Ile	Ser Leu	His Ala	Thr	His Ala	Thr
14150			14155			14160		
Arg Leu	Arg Val	Arg Leu	Thr	Arg Thr	Gly Ala	Asp	Ala Ile	Thr
14165			14170			14175		

Val	His	Thr	Ser	Asp	Thr	Thr	Gly	Ala	Pro	Val	Ala	Ile	Ile	Asp
14180						14185					14190			
Ser	Leu	Ile	Thr	Arg	Pro	Leu	Thr	Thr	Ala	Thr	Gly	Ser	Ala	Pro
14195						14200					14205			
Ala	Thr	Thr	Ala	Ala	Gly	Leu	Leu	His	Leu	Ser	Trp	Pro	Pro	His
14210						14215					14220			
Pro	Asp	Thr	Thr	Thr	Asp	Thr	Asp	Thr	Asp	Thr	Asp	Ala	Leu	Arg
14225						14230					14235			
Tyr	Gln	Val	Ile	Ala	Glu	Pro	Thr	Gln	Gln	Leu	Pro	Arg	Tyr	Leu
14240						14245					14250			
His	Asp	Leu	His	Thr	Ser	Thr	Asp	Leu	His	Thr	Ser	Thr	Thr	Glu
14255						14260					14265			
Ala	Asp	Val	Val	Val	Trp	Pro	Val	Pro	Val	Pro	Ser	Asn	Glu	Glu
14270						14275					14280			
Leu	Gln	Ala	His	Gln	Ala	Ser	Asp	Thr	Ala	Val	Ser	Ser	Arg	Ile
14285						14290					14295			
His	Thr	Leu	Thr	Arg	Gln	Thr	Leu	Thr	Val	Val	Gln	Asp	Trp	Leu
14300						14305					14310			
Thr	His	Pro	Asp	Thr	Thr	Gly	Thr	Arg	Leu	Val	Ile	Val	Thr	Arg
14315						14320					14325			
His	Gly	Val	Ser	Thr	Ser	Ala	His	Asp	Pro	Val	Pro	Asp	Leu	Ala
14330						14335					14340			
His	Ala	Ala	Val	Trp	Gly	Leu	Ile	Arg	Ser	Ala	Gln	Asn	Glu	His
14345						14350					14355			
Pro	Gly	Arg	Phe	Thr	Leu	Leu	Asp	Thr	Asp	Asp	Asn	Thr	Asn	Ser
14360						14365					14370			
Asp	Thr	Leu	Thr	Thr	Ala	Leu	Thr	Leu	Pro	Thr	Arg	Glu	Asn	Gln
14375						14380					14385			
Leu	Ala	Ile	Arg	Arg	Asp	Thr	Ile	His	Ile	Pro	Arg	Leu	Thr	Arg
14390						14395					14400			

Thr Ala	Val Leu Thr Pro	Pro	Asp Ser Gly Pro	Trp	Arg Leu Asp
14405		14410		14415	
Thr Thr	Gly Lys Gly Asp Leu	Ala Asn Leu Ala Leu	Leu Pro Thr		
14420		14425		14430	
Ala His	Thr Ala Leu Ala Ser	Gly Gln Ile Arg Ile	Asp Val Arg		
14435		14440		14445	
Ala Ala	Gly Leu Asn Phe His	Asp Val Val Val Ala	Leu Gly Leu		
14450		14455		14460	
Ile Pro	Asp Asp Gly Phe Gly	Gly Glu Ala Ala Gly	Val Ile Ser		
14465		14470		14475	
Glu Ile	Gly Pro Asp Val Tyr	Gly Phe Ala Val Gly	Asp Ala Val		
14480		14485		14490	
Thr Gly	Met Thr Val Ser Gly	Ala Phe Ala Pro Ser	Thr Val Ala		
14495		14500		14505	
Asp His	Arg Met Val Met Thr	Ile Pro Ala Arg Trp	Ser Phe Pro		
14510		14515		14520	
Gln Ala	Ala Ser Ile Pro Val	Val Phe Leu Thr Ala	Tyr Ile Ala		
14525		14530		14535	
Leu Ala	Glu Ile Ser Gly Leu	Ser Arg Gly Gln Arg	Val Leu Ile		
14540		14545		14550	
His Ala	Gly Thr Gly Gly Val	Gly Met Ala Ala Ile	Gln Leu Ala		
14555		14560		14565	
His His	Leu Gly Ala Glu Val	Phe Ala Thr Ala Ser	Ala Ala Lys		
14570		14575		14580	
Trp Ser	Thr Leu Glu Ala Leu	Gly Val Pro Arg Asp	His Ile Ala		
14585		14590		14595	
Ser Ser	Arg Thr Leu Asp Phe	Ser Asn Ala Phe Leu	Asp Ala Thr		
14600		14605		14610	
Asn Gly	Ala Gly Val Asp Val	Val Leu Asn Cys Leu	Ser Gly Glu		
14615		14620		14625	

Phe Val	Glu Ala Ser Leu	Ala	Leu Leu Pro Arg	Gly	Gly His Phe
14630		14635		14640	
Val Glu	Ile Gly Lys Thr	Asp	Ile Arg Asp Thr	Glu	Val Ile Ala
14645		14650		14655	
Ala Thr	His Pro Gly Val	Ile	Tyr Arg Ala Leu	Asp	Leu Leu Ser
14660		14665		14670	
Val Ser	Pro Asp His Ile	Gln	Arg Thr Leu Ala	Gln	Leu Ser Pro
14675		14680		14685	
Leu Phe	Ala Thr Asp Thr	Leu	Lys Pro Leu Pro	Thr	Thr Asn Tyr
14690		14695		14700	
Ser Ile	Tyr Gln Ala Ile	Ser	Ala Leu Arg Asp	Met	Ser Gln Ala
14705		14710		14715	
Arg His	Thr Gly Lys Ile	Val	Leu Thr Ala Pro	Val	Val Val Asp
14720		14725		14730	
Pro Glu	Gly Thr Val Leu	Ile	Thr Gly Gly Thr	Gly	Thr Leu Gly
14735		14740		14745	
Ala Leu	Phe Ala Glu His	Leu	Val Ser Ala His	Gly	Val Arg His
14750		14755		14760	
Leu Leu	Leu Thr Ser Arg	Arg	Gly Pro Gln Ala	His	Gly Ala Thr
14765		14770		14775	
Asp Leu	Gln Gln Arg Leu	Thr	Asp Leu Gly Ala	His	Val Thr Ile
14780		14785		14790	
Thr Ala	Cys Asp Ile Ser	Asp	Pro Glu Ala Leu	Ala	Ala Leu Val
14795		14800		14805	
Asn Ser	Val Pro Thr Gln	His	Arg Leu Thr Ala	Val	Val His Thr
14810		14815		14820	
Ala Ala	Val Leu Ala Asp	Thr	Pro Val Thr Glu	Leu	Thr Gly Asp
14825		14830		14835	
Gln Leu	Asp Gln Val Leu	Ala	Pro Lys Ile Asp	Ala	Ala Trp Gln
14840		14845		14850	

Leu His	Gln Leu Thr Tyr	Glu	His Asn Leu Ser	Ala	Phe Ile Met
14855		14860		14865	
Phe Ser	Ser Met Ala Gly	Met	Ile Gly Ser Pro	Gly	Gln Gly Asn
14870		14875		14880	
Tyr Ala	Ala Ala Asn Thr	Ala	Leu Asp Ala Leu	Ala	Asp Tyr Arg
14885		14890		14895	
His Arg	Leu Gly Leu Pro	Ala	Thr Ser Leu Ala	Trp	Gly Tyr Trp
14900		14905		14910	
Gln Thr	Arg Thr Gly Val	Thr	Ala His Leu Thr	Asp	Val Asp Leu
14915		14920		14925	
Ala Arg	Met Thr Arg Leu	Gly	Leu Met Pro Ile	Ala	Thr Ser His
14930		14935		14940	
Gly Leu	Ala Leu Phe Asp	Ala	Ala Leu Ala Thr	Gly	Gln Pro Val
14945		14950		14955	
Ser Ile	Pro Ala Pro Ile	Asn	Thr His Thr Leu	Ala	Arg His Ala
14960		14965		14970	
Arg Asp	Asn Thr Leu Thr	Pro	Ile Leu Ser Ala	Leu	Ile Thr Thr
14975		14980		14985	
Pro Arg	Arg Arg Ala Ala	Ser	Ala Ala Thr Asp	Leu	Ala Ala Arg
14990		14995		15000	
Leu Asn	Gly Leu Ser Pro	Gln	Gln Gln Gln Gln	Thr	Leu Ala Thr
15005		15010		15015	
Leu Val	Ala Ala Ala Thr	Ala	Thr Val Leu Gly	His	His Thr Pro
15020		15025		15030	
Glu Ser	Ile Ser Pro Ala	Thr	Ala Phe Lys Asp	Leu	Gly Ile Asp
15035		15040		15045	
Ser Leu	Thr Ala Leu Glu	Leu	Arg Asn Thr Leu	Thr	His Asn Thr
15050		15055		15060	
Gly Leu	Asp Leu Pro Pro	Thr	Leu Ile Phe Asp	His	Pro Thr Pro
15065		15070		15075	
Thr Ala	Leu Thr Gln His	Leu	His Thr Arg Leu	Thr	Thr Gly Ala

15080		15085		15090
Leu Val 15095	Pro Ala Pro Val	Val 15100	Ile Ala Ala Gly	Arg Thr Glu Glu 15105
Pro Val 15110	Ala Val Val Gly	Met 15115	Ala Cys Arg Phe	Pro Gly Gly Val 15120
Ala Ser 15125	Ala Asp Gln Leu	Trp 15130	Asp Leu Val Ile	Ala Gly Arg Asp 15135
Val Val 15140	Gly Asn Phe Pro	Ala 15145	Asp Arg Gly Trp	Asp Val Ala Gly 15150
Leu Phe 15155	Asp Pro Asp Pro	Asp 15160	Ala Val Gly Lys	Thr Tyr Thr Arg 15165
Tyr Gly 15170	Ala Phe Leu Asp	Asp 15175	Ala Ala Gly Phe	Asp Ala Gly Phe 15180
Phe Gly 15185	Ile Ser Pro Arg	Glu 15190	Ala Arg Ala Met	Asp Pro Gln Gln 15195
Arg Leu 15200	Leu Leu Glu Val	Cys 15205	Trp Glu Ala Leu	Glu Thr Ala Gly 15210
Ile Pro 15215	Ala His Thr Leu	Ala 15220	Gly Thr Ser Thr	Gly Val Phe Val 15225
Gly Ala 15230	Gly Ala Gln Ser	Tyr 15235	Gly Ala Thr Asn	Ser Asp Asp Ala 15240
Glu Gly 15245	Tyr Ala Met Thr	Gly 15250	Gly Ala Ile Ser	Val Met Ser Gly 15255
Arg Ile 15260	Ala Tyr Thr Leu	Gly 15265	Leu Glu Gly Pro	Ala Ile Thr Val 15270
Asp Thr 15275	Ala Cys Ser Ser	Ser 15280	Leu Val Ala Ile	His Leu Ala Cys 15285
Gln Ser 15290	Leu Arg Asn Asn	Glu 15295	Ser Gln Leu Ala	Leu Ala Gly Gly 15300
Val Thr	Val Met Ser Thr Pro		Ala Val Phe Thr Asp	Phe Ser Arg

15305		15310		15315	
Gln Arg Gly Leu Ala Pro Asp	Gly Arg Cys Lys Ala	Phe Ala Ala			
15320	15325	15330			
Thr Ala Asp Gly Thr Gly Phe	Gly Glu Gly Ala Ala	Val Leu Val			
15335	15340	15345			
Leu Glu Arg Leu Ser Glu Ala	Arg Arg Asn Asn His	Pro Val Leu			
15350	15355	15360			
Ala Ile Val Ala Gly Ser Ala	Ile Asn Gln Asp Gly	Ala Ser Asn			
15365	15370	15375			
Gly Leu Thr Ala Pro His Gly	Pro Ser Gln Gln Arg	Val Ile Asn			
15380	15385	15390			
Gln Ala Leu Ala Asn Ala Gly	Leu Thr His Asp Gln	Val Asp Ala			
15395	15400	15405			
Val Glu Ala His Gly Thr Gly	Thr Thr Leu Gly Asp	Pro Ile Glu			
15410	15415	15420			
Ala Gly Ala Leu His Ala Thr	Tyr Gly His His His	Thr Pro Asp			
15425	15430	15435			
Gln Pro Leu Trp Leu Gly Ser	Ile Lys Ser Asn Ile	Gly His Thr			
15440	15445	15450			
Gln Ala Ala Ala Gly Ala Ala	Gly Val Val Lys Met	Ile Gln Ala			
15455	15460	15465			
Ile Thr His Ala Thr Leu Pro	Ala Thr Leu His Val	Asp Gln Pro			
15470	15475	15480			
Ser Pro His Ile Asp Trp Ser	Ser Gly Thr Val Arg	Leu Leu Thr			
15485	15490	15495			
Glu Pro Ile Gln Trp Pro Asn	Thr Asp His Pro Arg	Thr Ala Ala			
15500	15505	15510			
Val Ser Ser Phe Gly Ile Ser	Gly Thr Asn Ala His	Leu Ile Leu			
15515	15520	15525			

Gln	Gln	Pro	Pro	Thr	Pro	Asp	Thr	Thr	Gln	Thr	Pro	Asn	Pro	Thr
15530						15535					15540			
Thr	Gly	Ser	Asp	Pro	Ala	Val	Gly	Ser	Asp	Ser	Ala	Val	Gly	Ser
15545						15550					15555			
Asp	Pro	Ala	Val	Gly	Val	Leu	Val	Trp	Pro	Leu	Ser	Ala	Arg	Ser
15560						15565					15570			
Ala	Pro	Gly	Leu	Ser	Ala	Gln	Ala	Ala	Arg	Leu	Tyr	Gln	His	Leu
15575						15580					15585			
Ser	Ala	His	Pro	Asp	Leu	Asp	Pro	Ile	Asp	Val	Ala	His	Ser	Leu
15590						15595					15600			
Ala	Thr	Thr	Arg	Ser	His	His	Pro	His	Arg	Ala	Thr	Ile	Thr	Thr
15605						15610					15615			
Ser	Ile	Glu	His	His	Ser	Glu	Asn	Asn	His	Asp	Thr	Thr	Asp	Ala
15620						15625					15630			
Leu	Ala	Ala	Leu	His	Ala	Leu	Ala	Asn	Asn	Gly	Thr	His	Pro	Leu
15635						15640					15645			
Leu	Ser	Arg	Gly	Leu	Leu	Thr	Pro	Gln	Gly	Pro	Gly	Lys	Thr	Val
15650						15655					15660			
Phe	Val	Phe	Pro	Gly	Gln	Gly	Ser	Gln	Tyr	Pro	Gly	Met	Gly	Ala
15665						15670					15675			
Asp	Leu	Tyr	Arg	Gln	Phe	Pro	Val	Phe	Ala	His	Ala	Leu	Asp	Glu
15680						15685					15690			
Val	Ala	Ala	Ala	Leu	Asn	Pro	His	Leu	Asp	Val	Ala	Leu	Leu	Glu
15695						15700					15705			
Val	Met	Phe	Ser	Gln	Gln	Asp	Thr	Ala	Met	Ala	Gln	Leu	Leu	Asp
15710						15715					15720			
Gln	Thr	Phe	Tyr	Ala	Gln	Pro	Ala	Leu	Phe	Ala	Leu	Gly	Thr	Ala
15725						15730					15735			
Leu	His	Arg	Leu	Phe	Thr	His	Ala	Gly	Ile	His	Pro	Asp	Tyr	Leu
15740						15745					15750			
Leu	Gly	His	Ser	Ile	Gly	Glu	Leu	Thr	Ala	Ala	Tyr	Ala	Ala	Gly



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Val Leu Ser Leu Gln Asp Ala	Ala Thr Leu Val Thr	Ser Arg Gly		
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Arg Leu Met Gln Ser Cys Thr	Pro Gly Gly Thr Met	Leu Ala Leu		
15785	15790	15795		
Gln Ala Ser Glu Ala Glu Val	Gln Pro Leu Leu Glu	Gly Leu Asp		
15800	15805	15810		
His Ala Val Ser Ile Ala Ala	Ile Asn Gly Ala Thr	Ser Ile Val		
15815	15820	15825		
Leu Ser Gly Asp His Asp Ser	Leu Glu Gln Ile Gly	Glu His Phe		
15830	15835	15840		
Ile Thr Gln Asp Arg Arg Thr	Thr Arg Leu Gln Val	Ser His Ala		
15845	15850	15855		
Phe His Ser Pro His Met Asp	Pro Ile Leu Glu Gln	Phe Arg Gln		
15860	15865	15870		
Ile Ala Ala Gln Leu Thr Phe	Ser Ala Pro Thr Leu	Pro Ile Leu		
15875	15880	15885		
Ser Asn Leu Thr Gly Gln Ile	Ala Arg His Asp Gln	Leu Ala Ser		
15890	15895	15900		
Pro Asp Tyr Trp Thr Gln Gln	Leu Arg Asn Thr Val	Arg Phe His		
15905	15910	15915		
Asp Thr Val Ala Ala Leu Leu	Gly Ala Gly Glu Gln	Val Phe Leu		
15920	15925	15930		
Glu Leu Ser Pro His Pro Val	Leu Thr Gln Ala Ile	Thr Asp Thr		
15935	15940	15945		
Val Glu Gln Ala Gly Gly Gly	Gly Ala Ala Val Pro	Ala Leu Arg		
15950	15955	15960		
Lys Asp Arg Pro Asp Ala Val	Ala Phe Ala Ala Ala	Leu Gly Gln		
15965	15970	15975		
Leu His Cys His Gly Ile Ser	Pro Ser Trp Asn Val	Leu Tyr Cys		
15980	15985	15990		

Gln Ala	Arg Pro Leu Thr	Leu	Pro Thr Tyr Ala	Phe	Gln His Gln
15995		16000		16005	
Arg Tyr	Trp Leu Leu Pro	Thr	Ala Gly Asp Phe	Ser	Gly Ala Asn
16010		16015		16020	
Thr His	Ala Met His Pro	Leu	Leu Asp Thr Ala	Thr	Glu Leu Ala
16025		16030		16035	
Glu Asn	Arg Gly Trp Val	Phe	Thr Gly Arg Ile	Ser	Pro Arg Thr
16040		16045		16050	
Gln Pro	Trp Leu Asn Glu	His	Ala Val Glu Ser	Ala	Val Leu Phe
16055		16060		16065	
Pro Asn	Thr Gly Phe Val	Glu	Leu Ala Leu His	Val	Ala Asp Arg
16070		16075		16080	
Ala Gly	Tyr Ser Ser Val	Asn	Glu Leu Ile Val	His	Thr Pro Leu
16085		16090		16095	
Leu Leu	Ala Gly His Asp	Thr	Ala Asp Leu Gln	Ile	Thr Val Thr
16100		16105		16110	
Asp Thr	Asp Asp Met Gly	Arg	Gln Ser Leu Asn	Ile	His Ser Arg
16115		16120		16125	
Pro His	Ile Gly His Asp	Asn	Thr Thr Thr Gly	Asp	Glu Gln Pro
16130		16135		16140	
Glu Trp	Val Leu His Ala	Ser	Ala Val Leu Thr	Ala	Gln Thr Thr
16145		16150		16155	
Asp His	Asn His Leu Pro	Leu	Thr Pro Val Pro	Trp	Pro Pro Pro
16160		16165		16170	
Gly Thr	Ala Ala Ile Glu	Val	Asp Asp Phe Tyr	Asp	Asp Leu Ala
16175		16180		16185	
Ala Gln	Gly Tyr Asn Tyr	Gly	Pro Thr Phe Gln	Gly	Val Gln Arg
16190		16195		16200	
Ile Trp	Arg Asp His Ala	Thr	Pro Asp Val Ile	Tyr	Ala Glu Val
16205		16210		16215	

Glu Leu 16220	Pro Glu Asp Thr Asp 16225	Ile Asp Gly Tyr Gly 16230	Ile His Pro
Ala Leu 16235	Phe Asp Ala Ala Leu 16240	His Pro Leu Leu Ala 16245	Leu Thr Gln
Pro Pro 16250	Thr Asn Asp Thr Asp 16255	Asp Thr Asn Thr Ala 16260	Asp Thr Gly
Asp Gln 16265	Val Arg Leu Pro Tyr 16270	Ala Phe Thr Gly Ile 16275	Ser Leu His
Ala Thr 16280	His Ala Thr Arg Leu 16285	Arg Val Arg Leu Thr 16290	Arg Thr Gly
Ala Asp 16295	Ala Ile Thr Val His 16300	Thr Ser Asp Thr Thr 16305	Gly Ala Pro
Val Ala 16310	Ile Ile Asp Ser Leu 16315	Ile Thr Arg Pro Leu 16320	Thr Thr Ala
Thr Gly 16325	Ser Ala Pro Ala Thr 16330	Thr Ala Ala Gly Leu 16335	Leu His Leu
Ser Trp 16340	Pro Pro His Pro Asp 16345	Thr Thr Thr Asp Thr 16350	Asp Thr Asp
Thr Asp 16355	Thr Asp Ala Leu Arg 16360	Tyr Gln Val Ile Ala 16365	Glu Pro Thr
Gln Gln 16370	Leu Pro Arg Tyr Leu 16375	His Asp Leu His Thr 16380	Ser Thr Asp
Leu His 16385	Thr Ser Thr Thr Glu 16390	Ala Asp Val Val Val 16395	Trp Pro Val
Pro Val 16400	Pro Ser Asn Glu Glu 16405	Leu Gln Ala His Gln 16410	Ala Ser Asp
Thr Ala 16415	Val Ser Ser Arg Ile 16420	His Thr Leu Thr Arg 16425	Gln Thr Leu
Thr Val	Val Gln Asp Trp Leu	Thr His Pro Asp Thr	Thr Gly Thr

16430		16435		16440
Arg Leu Val Ile Val Thr	Arg His Gly Val Ser Thr	Ser Ala His		
16445	16450	16455		
Asp Pro Val Pro Asp Leu	Ala His Ala Ala Val Trp	Gly Leu Ile		
16460	16465	16470		
Arg Ser Ala Gln Asn Glu	His Pro Gly Arg Phe Thr	Leu Leu Asp		
16475	16480	16485		
Thr Asp Asp Asn Thr Asn	Ser Asp Thr Leu Thr Thr	Ala Leu Thr		
16490	16495	16500		
Leu Pro Thr Arg Glu Asn	Gln Leu Ala Ile Arg Arg	Asp Thr Ile		
16505	16510	16515		
His Ile Pro Arg Leu Thr	Arg His Ser Ser Asp Gly	Ala Leu Thr		
16520	16525	16530		
Ala Pro Val Val Val Asp	Pro Glu Gly Thr Val Leu	Ile Thr Gly		
16535	16540	16545		
Gly Thr Gly Thr Leu Gly	Ala Leu Phe Ala Glu His	Leu Val Ser		
16550	16555	16560		
Ala His Gly Val Arg His	Leu Leu Leu Thr Ser Arg	Arg Gly Pro		
16565	16570	16575		
Gln Ala His Gly Ala Thr	Asp Leu Gln Gln Arg Leu	Thr Asp Leu		
16580	16585	16590		
Gly Ala His Val Thr Ile	Thr Ala Cys Asp Ile Ser	Asp Pro Glu		
16595	16600	16605		
Ala Leu Ala Ala Leu Val	Asn Ser Val Pro Thr Gln	His Arg Leu		
16610	16615	16620		
Thr Ala Val Val His Thr	Ala Ala Val Leu Ala Asp	Thr Pro Val		
16625	16630	16635		
Thr Glu Leu Thr Gly Asp	Gln Leu Asp Gln Val Leu	Ala Pro Lys		
16640	16645	16650		
Ile Asp Ala Ala Trp Gln	Leu His Gln Leu Thr Tyr	Glu His Asn		
16655	16660	16665		

Leu Ser 16670	Ala Phe Ile Met Phe 16675	Ser Ser Met Ala Gly 16680	Met Ile Gly
Ser Pro 16685	Gly Gln Gly Asn Tyr 16690	Ala Ala Ala Asn Thr 16695	Ala Leu Asp
Ala Leu 16700	Ala Asp Tyr Arg His 16705	Arg Leu Gly Leu Pro 16710	Ala Thr Ser
Leu Ala 16715	Trp Gly Tyr Trp Gln 16720	Thr His Thr Gly Leu 16725	Thr Ala His
Leu Thr 16730	Asp Val Asp Leu Ala 16735	Arg Met Thr Arg Leu 16740	Gly Leu Met
Pro Ile 16745	Ala Thr Ser His Gly 16750	Leu Ala Leu Phe Asp 16755	Ala Ala Leu
Ala Thr 16760	Gly Gln Pro Val Ser 16765	Ile Pro Ala Pro Ile 16770	Asn Thr His
Thr Leu 16775	Ala Arg His Ala Arg 16780	Asp Asn Thr Leu Ala 16785	Pro Ile Leu
Ser Ala 16790	Leu Ile Thr Thr Pro 16795	Arg Arg Arg Ala Ala 16800	Ser Ala Ala
Thr Asp 16805	Leu Ala Ala Arg Leu 16810	Asn Gly Leu Ser Pro 16815	Gln Gln Gln
Gln Gln 16820	Thr Leu Ala Thr Leu 16825	Val Ala Ala Ala Thr 16830	Ala Thr Val
Leu Gly 16835	His His Thr Pro Glu 16840	Ser Ile Ser Pro Ala 16845	Thr Ala Phe
Lys Asp 16850	Leu Gly Ile Asp Ser 16855	Leu Thr Ala Leu Glu 16860	Leu Arg Asn
Thr Leu 16865	Thr His Asn Thr Gly 16870	Leu Asp Leu Pro Pro 16875	Thr Leu Ile
Phe Asp 16880	His Pro Thr Pro Thr 16885	Ala Leu Thr Gln His 16890	Leu His Thr

Arg Leu Thr Gln Ile Glu Ser Pro Asn Ser Glu Asp Ser Met Leu  
 16895 16900 16905

Asn Leu Lys Asn Leu Asp Arg Ile Glu Ser Tyr Ile Phe Arg Asn  
 16910 16915 16920

Ser Gly Glu Asp Arg Ala His Val Ile Ala Asn Arg Leu Arg Ser  
 16925 16930 16935

Ile Leu Ser Lys Trp Asp Gly Thr Arg Ser Pro Glu Leu Pro Ala  
 16940 16945 16950

Glu Leu His Leu Glu Ser Ala Thr Asp Asp Glu Leu Phe Ser Leu  
 16955 16960 16965

Ala Asn Met Phe Arg Thr Pro Thr Ser Glu Ile Ser Pro Thr Leu  
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Glu Gly Gly Arg Gly Val Asn  
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<211> 2410

<212> PRT

<213> Mycobacterium ulcerans

<220>

<223> Amino acid sequence of the protein encoded by mlsA2 gene.

<400> 8

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Thr Asp Leu His Gln Met Gln Ala Arg Leu Arg Lys Ile Glu Lys Gln  
 20 25 30

Arg Ser Glu Arg Val Ala Val Val Gly Met Ala Cys Arg Phe Pro Gly  
 35 40 45

Gly Val Ala Ser Ala Asp Gln Leu Trp Asp Leu Val Ile Ala Gly Arg  
 50 55 60

Asp Val Val Gly Asn Phe Pro Ala Asp Arg Gly Trp Asp Val Glu Gly  
 65 70 75 80

Leu Phe Asp Pro Asp Pro Asp Ala Val Gly Lys Thr Tyr Thr Arg Tyr  
 85 90 95

Gly Ala Phe Leu Asp Asp Ala Ala Gly Phe Asp Ala Gly Phe Phe Gly  
 100 105 110

Ile Ser Pro Arg Glu Ala Arg Ala Met Asp Pro Gln Gln Arg Leu Leu  
 115 120 125

Leu Glu Val Cys Trp Glu Ala Leu Glu Thr Ala Gly Ile Pro Ala His  
 130 135 140

Thr Leu Ala Gly Thr Ser Thr Gly Val Phe Val Gly Ala Trp Ala Gln  
 145 150 155 160

Ser Tyr Gly Ala Thr Asn Ser Asp Gly Ala Glu Gly Tyr Ala Met Thr  
 165 170 175

Gly Gly Ser Thr Ser Val Met Ser Gly Arg Ile Ala Tyr Thr Leu Gly  
 180 185 190

Leu Glu Gly Pro Ala Ile Thr Val Asp Thr Ala Cys Ser Ser Ser Leu  
 195 200 205

Val Ala Ile His Leu Ala Cys Gln Ser Leu Arg Asn Asn Glu Ser Gln  
 210 215 220

Leu Ala Leu Ala Gly Gly Val Thr Val Met Ser Thr Pro Ala Val Phe  
 225 230 235 240

Thr Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Cys Lys  
 245 250 255

Ala Phe Ala Ala Thr Ala Asp Gly Thr Gly Trp Gly Glu Gly Ala Ala  
 260 265 270

Val Leu Val Leu Glu Arg Leu Ser Glu Ala Arg Arg Asn Asn His Pro  
 275 280 285

Val Leu Ala Ile Val Ala Gly Ser Ala Ile Asn Gln Asp Gly Ala Ser  
 290 295 300

Asn Gly Leu Thr Ala Pro His Gly Pro Ser Gln Gln Arg Val Ile Asn  
 305 310 315 320

Gln Ala Leu Ala Asn Ala Gly Leu Thr His Asp Gln Val Asp Ala Val  
 325 330 335

Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala Ser  
 340 345 350

Ala Leu His Ala Thr Tyr Gly His His His Thr Pro Asp Gln Pro Leu  
 355 360 365

Trp Leu Gly Ser Ile Lys Ser Asn Ile Gly His Thr Gln Ala Ala Ala  
 370 375 380

Gly Ala Ala Gly Val Val Lys Met Ile Gln Ala Ile Thr His Ala Thr  
 385 390 395 400

Leu Pro Ala Thr Leu His Val Asp Gln Pro Ser Pro His Ile Asp Trp  
 405 410 415

Ser Ser Gly Thr Val Arg Leu Leu Thr Glu Pro Ile Gln Trp Pro Asn  
 420 425 430

Thr Asp His Pro Arg Thr Ala Ala Val Ser Ser Phe Gly Ile Ser Gly  
 435 440 445

Thr Asn Ala His Leu Ile Leu Gln Gln Pro Pro Thr Pro Asp Thr Thr  
 450 455 460

Gln Thr Pro Asn Thr Thr Thr Gly Ser Asp Pro Ala Val Gly Ser Asp  
 465 470 475 480

Ser Ala Val Gly Ser Asp Pro Ala Val Gly Val Leu Val Trp Pro Leu  
 485 490 495

Ser Ala Arg Ser Ala Pro Gly Leu Ser Ala Gln Ala Ala Arg Leu Tyr  
 500 505 510

Gln His Leu Ser Ala His Pro Asp Leu Asp Pro Ile Asp Val Ala His  
 515 520 525

Ser Leu Ala Thr Thr Arg Ser His His Pro His Arg Ala Thr Ile Thr  
 530 535 540

Thr Ser Ile Glu His His Ser Glu Asn Asn His Asp Thr Thr Asp Ala  
 545 550 555 560

Leu Ala Ala Leu His Ala Leu Ala Asn Asn Gly Thr His Pro Leu Leu  
 565 570 575



Ser Arg Gly Leu Leu Thr Pro Gln Gly Pro Gly Lys Thr Val Phe Val  
 580 585 590

Phe Pro Gly Gln Gly Ser Gln Tyr Pro Gly Met Gly Ala Asp Leu Tyr  
 595 600 605

Arg Gln Phe Pro Val Phe Ala His Ala Leu Asp Glu Val Ala Ala Ala  
 610 615 620

Leu Asn Pro His Leu Asp Val Ala Leu Leu Glu Val Met Phe Ser Gln  
 625 630 635 640

Gln Asp Thr Ala Met Ala Gln Leu Leu Asp Gln Thr Phe Tyr Ala Gln  
 645 650 655

Pro Ala Leu Phe Ala Leu Gly Thr Ala Leu His Arg Leu Phe Thr His  
 660 665 670

Ala Gly Ile His Pro Asp Tyr Leu Leu Gly His Ser Ile Gly Glu Leu  
 675 680 685

Thr Ala Ala Tyr Ala Ala Gly Val Leu Ser Leu Gln Asp Ala Ala Thr  
 690 695 700

Leu Val Thr Ser Arg Gly Arg Leu Met Gln Ser Cys Thr Pro Gly Gly  
 705 710 715 720

Thr Met Leu Ala Leu Gln Ala Ser Glu Ala Glu Val Gln Pro Leu Leu  
 725 730 735

Glu Gly Leu Asp His Ala Val Ser Ile Ala Ala Ile Asn Gly Ala Thr  
 740 745 750

Ser Ile Val Leu Ser Gly Asp His Asp Ser Leu Glu Gln Ile Gly Glu  
 755 760 765

His Phe Ile Thr Gln Asp Arg Arg Thr Thr Arg Leu Gln Val Ser His  
 770 775 780

Ala Phe His Ser Pro His Met Asp Pro Ile Leu Glu Gln Phe Arg Gln  
 785 790 795 800

Ile Ala Ala Gln Leu Thr Phe Ser Ala Pro Thr Leu Pro Ile Leu Ser  
 805 810 815

Asn Leu Thr Gly Gln Ile Ala Arg His Asp Gln Leu Ala Ser Pro Asp  
 820 825 830

Tyr Trp Thr Gln Gln Leu Arg Asn Thr Val Arg Phe His Asp Thr Val  
 835 840 845

Ala Ala Leu Leu Gly Ala Gly Glu Gln Val Phe Leu Glu Leu Ser Pro  
 850 855 860

His Pro Val Leu Thr Gln Ala Ile Thr Asp Thr Val Glu Gln Ala Gly  
 865 870 875 880

Gly Gly Gly Ala Ala Val Pro Ala Leu Arg Lys Asp Arg Pro Asp Ala  
 885 890 895

Val Ala Phe Ala Ala Ala Leu Gly Gln Leu His Cys His Gly Ile Ser  
 900 905 910

Pro Ser Trp Asn Val Leu Tyr Cys Gln Ala Arg Pro Leu Thr Leu Pro  
 915 920 925

Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Leu Pro Thr Ala Gly  
 930 935 940

Asp Phe Ser Gly Ala Asn Thr His Ala Met His Pro Leu Leu Asp Thr  
 945 950 955 960

Ala Thr Glu Leu Ala Glu Asn Arg Gly Trp Val Phe Thr Gly Arg Ile  
 965 970 975

Ser Pro Arg Thr Gln Pro Trp Leu Asn Glu His Ala Val Glu Ser Ala  
 980 985 990

Val Leu Phe Pro Gly Thr Gly Phe Val Glu Leu Ala Leu His Val Ala  
 995 1000 1005

Asp Arg Ala Gly Tyr Ser Ser Val Asn Glu Leu Ile Val His Thr  
 1010 1015 1020

Pro Leu Leu Leu Ala Gly His Asp Thr Ala Asp Leu Gln Ile Thr  
 1025 1030 1035

Val Thr Asp Thr Asp Asp Met Gly Arg Gln Ser Leu Asn Ile His  
 1040 1045 1050

Ser	His	Pro	His	Ile	Gly	His	Asp	Asn	Thr	Thr	Thr	Gly	Asp	Glu
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Gln	Pro	Glu	Trp	Val	Leu	His	Ala	Ser	Ala	Val	Leu	Thr	Ala	Gln
1070						1075					1080			
Thr	Thr	Asp	His	Asn	His	Leu	Pro	Leu	Thr	Pro	Val	Pro	Trp	Pro
1085						1090					1095			
Pro	Pro	Gly	Thr	Ala	Ala	Ile	Glu	Val	Asp	Asp	Phe	Tyr	Asp	Asp
1100						1105					1110			
Leu	Ala	Ala	Gln	Gly	Tyr	Asn	Tyr	Gly	Pro	Thr	Phe	Gln	Gly	Val
1115						1120					1125			
Gln	Arg	Ile	Trp	Arg	Asp	His	Ala	Thr	Pro	Asp	Val	Ile	Tyr	Ala
1130						1135					1140			
Glu	Val	Glu	Leu	Pro	Glu	Asp	Thr	Asp	Ile	Asp	Gly	Tyr	Gly	Ile
1145						1150					1155			
His	Pro	Ala	Leu	Phe	Asp	Ala	Ala	Leu	His	Pro	Leu	Leu	Ala	Leu
1160						1165					1170			
Thr	Gln	Pro	Pro	Thr	Asn	Asp	Thr	Asp	Asp	Thr	Asn	Thr	Ala	Asp
1175						1180					1185			
Thr	Gly	Asp	Gln	Val	Arg	Leu	Pro	Tyr	Ala	Phe	Thr	Gly	Ile	Ser
1190						1195					1200			
Leu	His	Ala	Thr	His	Ala	Thr	Arg	Leu	Arg	Val	Arg	Leu	Thr	Arg
1205						1210					1215			
Thr	Gly	Ala	Asp	Ala	Ile	Thr	Val	His	Thr	Ser	Asp	Thr	Thr	Gly
1220						1225					1230			
Ala	Pro	Val	Ala	Ile	Ile	Asp	Ser	Leu	Ile	Thr	Arg	Pro	Leu	Thr
1235						1240					1245			
Thr	Ala	Thr	Gly	Ser	Ala	Pro	Ala	Thr	Thr	Ala	Ala	Gly	Leu	Leu
1250						1255					1260			
His	Leu	Ser	Trp	Pro	Pro	His	Pro	Asp	Thr	Thr	Thr	Asp	Thr	Asp
1265						1270					1275			
Thr	Asp	Thr	Asp	Ala	Leu	Arg	Tyr	Gln	Val	Ile	Ala	Glu	Pro	Thr

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Gln Gln Leu Pro Arg Tyr	Leu His Asp Leu His Thr Ser Thr Asp			
1295	1300		1305	
Leu His Thr Ser Thr Thr	Glu Ala Asp Val Val Val Trp Pro Val			
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Pro Val Pro Ser Asn Glu Glu	Leu Gln Ala His Gln Ala Ser Asp			
1325	1330		1335	
Thr Ala Val Ser Ser Arg Ile	His Thr Leu Thr Arg Gln Thr Leu			
1340	1345		1350	
Thr Val Val Gln Asp Trp Leu	Thr His Pro Asp Thr Thr Gly Thr			
1355	1360		1365	
Arg Leu Val Ile Val Thr Arg	His Gly Val Ser Thr Ser Ala His			
1370	1375		1380	
Asp Pro Val Pro Asp Leu Ala	His Ala Ala Val Trp Gly Leu Ile			
1385	1390		1395	
Arg Ser Ala Gln Asn Glu His	Pro Gly Arg Phe Thr Leu Leu Asp			
1400	1405		1410	
Thr Asp Asp Asn Thr Asn Ser	Asp Thr Leu Thr Thr Ala Leu Thr			
1415	1420		1425	
Leu Pro Thr Arg Glu Asn Gln	Leu Ala Ile Arg Arg Asp Thr Ile			
1430	1435		1440	
His Ile Pro Arg Leu Thr Arg	Thr Ala Val Leu Thr Pro Pro Asp			
1445	1450		1455	
Ser Gly Pro Trp Arg Leu Asp	Thr Thr Gly Lys Gly Asp Leu Ala			
1460	1465		1470	
Asn Leu Ala Leu Leu Pro Thr	Ala His Thr Ala Leu Ala Ser Gly			
1475	1480		1485	
Gln Ile Arg Ile Asp Val Arg	Ala Ala Gly Leu Asn Phe His Asp			
1490	1495		1500	
Val Val Val Ala Leu Gly Leu	Ile Pro Asp Asp Gly Phe Gly Gly			
1505	1510		1515	

Glu Ala	Ala Gly Val Ile	Ser	Glu Ile Gly Pro Asp	Val Tyr Gly
1520		1525		1530
Phe Ala	Val Gly Asp Ala Val	Thr Gly Met Thr Val	Ser Gly Ala	
1535		1540		1545
Phe Ala	Pro Ser Thr Val Ala	Asp His Arg Met Val	Met Thr Ile	
1550		1555		1560
Pro Ala	Arg Trp Ser Phe Pro	Gln Ala Ala Ser Ile	Pro Val Val	
1565		1570		1575
Phe Leu	Thr Ala Tyr Ile Ala	Leu Ala Glu Ile Ser	Gly Leu Ser	
1580		1585		1590
Arg Gly	Gln Arg Val Leu Ile	His Ala Gly Thr Gly	Gly Val Gly	
1595		1600		1605
Met Ala	Ala Ile Gln Leu Ala	His His Leu Gly Ala	Glu Val Phe	
1610		1615		1620
Ala Thr	Ala Ser Ala Ala Lys	Trp Ser Thr Leu Glu	Ala Leu Gly	
1625		1630		1635
Val Pro	Arg Asp His Ile Ala	Ser Ser Arg Thr Leu	Asp Phe Ser	
1640		1645		1650
Asn Ala	Phe Leu Asp Ala Thr	Asn Gly Ala Gly Val	Asp Val Val	
1655		1660		1665
Leu Asn	Cys Leu Ser Gly Glu	Phe Val Glu Ala Ser	Leu Ala Leu	
1670		1675		1680
Leu Pro	Arg Gly Gly His Phe	Val Glu Ile Gly Lys	Thr Asp Ile	
1685		1690		1695
Arg Asp	Thr Glu Val Ile Ala	Ala Thr His Pro Gly	Val Ile Tyr	
1700		1705		1710
Arg Ala	Leu Asp Leu Leu Ser	Val Ser Pro Asp His	Ile Gln Arg	
1715		1720		1725
Thr Leu	Ala Gln Leu Ser Pro	Leu Phe Ala Thr Asp	Thr Leu Lys	
1730		1735		1740

Pro Leu 1745	Pro Thr Thr Asn Tyr 1750	Ser Ile Tyr Gln Ala 1755	Ile Ser Ala
Leu Arg 1760	Asp Met Ser Gln Ala 1765	Arg His Thr Gly Lys 1770	Ile Val Leu
Thr Ala 1775	Pro Val Val Val Asp 1780	Pro Glu Gly Thr Val 1785	Leu Ile Thr
Gly Gly 1790	Thr Gly Thr Leu Gly 1795	Ala Leu Phe Ala Glu 1800	His Leu Val
Ser Ala 1805	His Gly Val Arg His 1810	Leu Leu Leu Thr Ser 1815	Arg Arg Gly
Pro Gln 1820	Ala His Gly Ala Thr 1825	Asp Leu Gln Gln Arg 1830	Leu Thr Asp
Leu Gly 1835	Ala His Val Thr Ile 1840	Thr Ala Cys Asp Ile 1845	Ser Asp Pro
Glu Ala 1850	Leu Ala Ala Leu Val 1855	Asn Ser Val Pro Thr 1860	Gln His Arg
Leu Thr 1865	Ala Val Val His Thr 1870	Ala Ala Val Leu Ala 1875	Asp Thr Pro
Val Thr 1880	Glu Leu Thr Gly Asp 1885	Gln Leu Asp Gln Val 1890	Leu Ala Pro
Lys Ile 1895	Asp Ala Ala Trp Gln 1900	Leu His Gln Leu Thr 1905	Tyr Glu His
Asn Leu 1910	Ser Ala Phe Ile Met 1915	Phe Ser Ser Met Ala 1920	Gly Met Ile
Gly Ser 1925	Pro Gly Gln Gly Asn 1930	Tyr Ala Ala Ala Asn 1935	Thr Ala Leu
Asp Ala 1940	Leu Ala Asp Tyr Arg 1945	His Arg Leu Gly Leu 1950	Pro Ala Thr
Ser Leu 1955	Ala Trp Gly Tyr Trp 1960	Gln Thr Arg Thr Gly 1965	Val Thr Ala

His Leu Thr Asp Val Asp Leu Ala Arg Met Thr Arg Leu Gly Leu  
 1970 1975 1980

Met Pro Ile Ala Thr Ser His Gly Leu Ala Leu Phe Asp Ala Ala  
 1985 1990 1995

Leu Ala Thr Gly Gln Pro Val Ser Ile Pro Ala Pro Ile Asn Thr  
 2000 2005 2010

His Thr Leu Ala Arg His Ala Arg Asp Asn Thr Leu Thr Pro Ile  
 2015 2020 2025

Leu Ser Ala Leu Ile Thr Thr Pro Arg Arg Arg Ala Ala Ser Ala  
 2030 2035 2040

Ala Thr Asp Leu Ala Ala Arg Leu Asn Gly Leu Ser Pro Gln Gln  
 2045 2050 2055

Gln Gln Gln Thr Leu Ala Thr Leu Val Ala Ala Ala Thr Ala Thr  
 2060 2065 2070

Val Leu Gly His His Thr Pro Glu Ser Ile Ser Pro Ala Thr Ala  
 2075 2080 2085

Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Leu Glu Leu Arg  
 2090 2095 2100

Asn Thr Leu Thr His Asn Thr Gly Leu Asp Leu Pro Pro Thr Leu  
 2105 2110 2115

Ile Phe Asp His Pro Thr Pro His Ala Leu Thr Gln His Leu His  
 2120 2125 2130

Thr Arg Leu Thr Gln Ser His Thr Pro Val Gly Pro Ile Ala Ser  
 2135 2140 2145

Leu Leu Ser His Ala Ile Asp Glu Gly Lys Phe Arg Ala Gly Ala  
 2150 2155 2160

Asp Leu Leu Met Ala Ala Ser Asn Leu Asn Gln Ser Phe Ser Asn  
 2165 2170 2175

Met Ala Glu Leu Asn Gln Leu Pro Ala Val Thr Asp Ile Ala Asp  
 2180 2185 2190

Ala Ser Pro Asp Gly Leu Leu Thr Leu Ile Cys Ile Ser Thr Ser  
 2195 2200 2205

Glu Asn Glu Tyr Ala Arg Leu Ala Ala Ala Asn Ile His Ser Leu  
 2210 2215 2220

Thr Phe Ala Glu Ile Ala Ala Pro Gly Phe Tyr Asp Ala Gln Leu  
 2225 2230 2235

Pro Asn Ser Ile Glu Thr Ser Ala Glu Ala Leu Ala Thr Ala Ile  
 2240 2245 2250

Thr Gly Ala Tyr Ala Asn Thr Ser Ile Val Leu Val Ala His Ser  
 2255 2260 2265

Ile Val Cys Glu Leu Ala Gln Ala Thr Met Thr Arg Leu Gln Asp  
 2270 2275 2280

Ala Asp Ile Asp Leu Val Gly Leu Val Leu Leu Asp Pro Leu Glu  
 2285 2290 2295

Gly Thr Asn Ser Thr Glu Asp Tyr Val Glu Thr Val Leu Thr Arg  
 2300 2305 2310

Ile Glu His Ile Asn Ala Pro Arg Val Gly Val Asp Gly Tyr Leu  
 2315 2320 2325

Ala Ala Leu Gly Arg Tyr Leu Gln Phe His Glu Asp Arg Arg Ile  
 2330 2335 2340

Pro Ile Pro Glu Thr Arg His Met Thr Leu His Ser Asp Thr Lys  
 2345 2350 2355

Ile Asp Arg Ala Gln Thr Pro Met Asn Leu Leu Gln Asp Glu Ala  
 2360 2365 2370

Ala Leu Thr Ala Leu Lys Ile Gly Asn Trp Met Asn Asp Thr Gly  
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Ser Ile Ala Val Thr Leu Arg Asp Gly Pro Val Phe Leu Gly Arg  
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Ala Arg Ser Val Asn Met Arg  
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<213> Mycobacterium ulcerans

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<223> Amino acid sequence of the protein encoded by mlsB gene.

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Gly Asp Ala Val Ala Val Val Gly Met Ser Cys Arg Val Pro Gly Ala  
20 25 30

Ser Asp Pro Asp Ala Leu Trp Ala Leu Leu Arg Asp Gly Ile Ser Val  
35 40 45

Val Asp Glu Ile Pro Ser Ala Arg Trp Asn Leu Asp Gly Leu Val Ala  
50 55 60

His Arg Leu Thr Asp Glu Gln Arg Ser Ala Leu Arg His Gly Ala Phe  
65 70 75 80

Leu Asp Asp Val Glu Gly Phe Asp Ala Ala Phe Phe Gly Ile Asn Pro  
85 90 95

Ser Glu Ala Gly Ser Met Asp Pro Gln Gln Arg Leu Met Leu Glu Leu  
100 105 110

Thr Trp Ala Ala Leu Glu Asp Ala Arg Ile Val Pro Glu His Leu Ser  
115 120 125

Gly Ser Ser Ser Gly Val Phe Thr Gly Ala Met Ser Asp Asp Tyr Thr  
130 135 140

Thr Ala Val Thr Tyr Arg Ala Ala Met Thr Ala His Thr Phe Ala Gly  
145 150 155 160

Thr His Arg Ser Leu Ile Ala Asn Arg Val Ser Tyr Thr Leu Gly Leu  
165 170 175

Arg Gly Pro Ser Leu Val Ile Asp Thr Gly Gln Ser Ser Ser Leu Val  
180 185 190

Ala Val His Val Ala Met Glu Ser Leu Arg Arg Glu Glu Thr Ser Leu  
195 200 205

Ala Ile Ala Gly Gly Ile His Leu Asn Leu Ser Leu Ala Ala Ala Leu  
 210 215 220

Ser Ala Ala His Phe Gly Ala Leu Ser Pro Asp Gly Arg Cys Tyr Thr  
 225 230 235 240

Phe Asp Ala Arg Ala Asn Gly Tyr Val Arg Gly Glu Gly Gly Gly Val  
 245 250 255

Val Val Leu Lys Arg Leu Asn Asp Ala Leu Ala Asp Gly Asn His Ile  
 260 265 270

Tyr Cys Val Ile Arg Gly Ser Ser Val Asn Asn Asp Gly Ala Thr Gln  
 275 280 285

Asp Leu Thr Ala Pro Gly Val Asp Gly Gln Arg Gln Ala Leu Leu Gln  
 290 295 300

Ala Tyr Glu Arg Ala Glu Ile Asp Pro Ser Glu Val Gln Tyr Val Glu  
 305 310 315 320

Leu His Gly Thr Gly Thr Arg Leu Gly Asp Pro Thr Glu Ala His Ser  
 325 330 335

Leu His Ser Val Phe Gly Thr Ser Thr Val Pro Arg Ser Pro Leu Leu  
 340 345 350

Val Gly Ser Ile Lys Thr Asn Ile Gly His Leu Glu Gly Ala Ala Gly  
 355 360 365

Ile Leu Gly Leu Ile Lys Thr Ala Leu Ala Val His His Arg Gln Leu  
 370 375 380

Pro Pro Ser Leu Asn Tyr Thr Val Pro Asn Pro Lys Ile Pro Leu Glu  
 385 390 395 400

Gln Leu Gly Leu Arg Val Gln Thr Thr Leu Ser Glu Trp Pro Asp Leu  
 405 410 415

Asp Lys Pro Leu Thr Ala Gly Val Ser Ser Phe Ser Met Gly Gly Thr  
 420 425 430

Asn Ala His Leu Ile Leu Gln Gln Pro Pro Thr Pro Asp Thr Thr Gln  
 435 440 445

Thr Pro Asn Pro Thr Thr Gly Ser Asp Pro Ala Val Gly Ser Asp Pro  
 450 455 460

Ala Val Gly Val Leu Val Trp Pro Leu Ser Ala Arg Ser Ala Pro Gly  
 465 470 475 480

Leu Ser Ala Gln Ala Ala Arg Leu Tyr Gln His Leu Ser Ala His Pro  
 485 490 495

Asp Leu Asp Pro Ile Asp Val Ala His Ser Leu Ala Thr Thr Arg Ser  
 500 505 510

His His Pro His Arg Ala Thr Ile Thr Thr Ser Ile Glu His His Ser  
 515 520 525

Glu Asn Asn His Asp Thr Thr Asp Ala Leu Ala Ala Leu His Ala Leu  
 530 535 540

Ala Asn Asn Gly Thr His Pro Leu Leu Ser Arg Gly Leu Leu Thr Pro  
 545 550 555 560

Gln Gly Pro Gly Lys Thr Val Phe Val Phe Pro Gly Gln Gly Ser Gln  
 565 570 575

Tyr Pro Gly Met Gly Ala Asp Leu Tyr Arg Gln Phe Pro Val Phe Ala  
 580 585 590

His Ala Leu Asp Glu Val Ala Ala Ala Leu Asn Pro His Leu Asp Val  
 595 600 605

Ala Leu Leu Glu Val Met Phe Ser Gln Gln Asp Thr Ala Met Ala Gln  
 610 615 620

Leu Leu Asp Gln Thr Phe Tyr Ala Gln Pro Ala Leu Phe Ala Leu Gly  
 625 630 635 640

Thr Ala Leu His Arg Leu Phe Thr His Ala Gly Ile His Pro Asp Tyr  
 645 650 655

Leu Leu Gly His Ser Ile Gly Glu Leu Thr Ala Ala Tyr Ala Ala Gly  
 660 665 670

Val Leu Ser Leu Gln Asp Ala Ala Thr Leu Val Thr Ser Arg Gly Arg  
 675 680 685

Leu Met Gln Ser Cys Thr Pro Gly Gly Thr Met Leu Ala Leu Gln Ala  
 690 695 700

Ser Glu Ala Glu Val Gln Pro Leu Leu Glu Gly Leu Asp His Ala Val  
 705 710 715 720

Ser Ile Ala Ala Ile Asn Gly Ala Thr Ser Ile Val Leu Ser Gly Asp  
 725 730 735

His Asp Ser Leu Glu Gln Ile Gly Glu His Phe Ile Thr Gln Asp Arg  
 740 745 750

Arg Thr Thr Arg Leu Gln Val Ser His Ala Phe His Ser Pro His Met  
 755 760 765

Asp Pro Ile Leu Glu Gln Phe Arg Gln Ile Ala Ala Gln Leu Thr Phe  
 770 775 780

Ser Ala Pro Thr Leu Pro Ile Leu Ser Asn Leu Thr Gly Gln Ile Ala  
 785 790 795 800

Arg His Asp Gln Leu Ala Ser Pro Asp Tyr Trp Thr Gln Gln Leu Arg  
 805 810 815

Asn Thr Val Arg Phe His Asp Thr Val Ala Ala Leu Leu Gly Ala Gly  
 820 825 830

Glu Gln Val Phe Leu Glu Leu Ser Pro His Pro Val Leu Thr Gln Ala  
 835 840 845

Ile Thr Asp Thr Val Glu Gln Ala Gly Gly Gly Gly Ala Ala Val Pro  
 850 855 860

Ala Leu Arg Lys Asp Arg Pro Asp Ala Val Ala Phe Ala Ala Ala Leu  
 865 870 875 880

Gly Gln Leu His Cys His Gly Ile Ser Pro Ser Trp Asn Val Leu Tyr  
 885 890 895

Cys Gln Ala Arg Pro Leu Thr Leu Pro Thr Tyr Ala Phe Gln His Gln  
 900 905 910

Arg Tyr Trp Leu Leu Pro Thr Ala Gly Asp Phe Ser Gly Ala Asn Thr  
 915 920 925

His Ala Met His Pro Leu Leu Asp Thr Ala Thr Glu Leu Ala Glu Asn

930

935

940

Arg Gly Trp Val Phe Thr Gly Arg Ile Ser Pro Arg Thr Gln Pro Trp  
945 950 955 960

Leu Asn Glu His Ala Val Glu Ser Ala Val Leu Phe Pro Asn Thr Gly  
965 970 975

Phe Val Glu Leu Ala Leu His Val Ala Asp Arg Ala Gly Tyr Ser Ser  
980 985 990

Val Asn Glu Leu Ile Val His Thr Pro Leu Leu Leu Ala Gly His Asp  
995 1000 1005

Thr Ala Asp Leu Gln Ile Thr Val Thr Asp Thr Asp Asp Met Gly  
1010 1015 1020

Arg Gln Ser Leu Asn Ile His Ser His Pro His Ile Gly His Asp  
1025 1030 1035

Asn Thr Thr Thr Gly Asp Glu Gln Pro Glu Trp Val Leu His Ala  
1040 1045 1050

Ser Ala Val Leu Thr Ala Gln Thr Thr Asp His Asn His Leu Pro  
1055 1060 1065

Leu Thr Pro Val Pro Trp Pro Pro Pro Gly Thr Ala Ala Ile Glu  
1070 1075 1080

Val Asp Asp Phe Tyr Asp Asp Leu Ala Ala Gln Gly Tyr Asn Tyr  
1085 1090 1095

Gly Pro Thr Phe Gln Gly Val Gln Arg Ile Trp Arg Asp His Ala  
1100 1105 1110

Thr Pro Asp Val Ile Tyr Ala Glu Val Glu Leu Pro Glu Asp Thr  
1115 1120 1125

Asp Ile Asp Gly Tyr Gly Ile His Pro Ala Leu Phe Asp Ala Ala  
1130 1135 1140

Leu His Pro Leu Leu Ala Leu Thr Gln Pro Pro Thr Asn Asp Thr  
1145 1150 1155

Asp Asp Thr Asn Thr Ala Asp Thr Gly Asp Gln Val Arg Leu Pro  
1160 1165 1170

Tyr	Ala	Phe	Thr	Gly	Ile	Ser	Leu	His	Ala	Thr	His	Ala	Thr	Arg
1175						1180					1185			
Leu	Arg	Val	Arg	Leu	Thr	Arg	Thr	Gly	Ala	Asp	Ala	Ile	Thr	Val
1190						1195					1200			
His	Thr	Ser	Asp	Thr	Thr	Gly	Ala	Pro	Val	Ala	Ile	Ile	Asp	Ser
1205						1210					1215			
Leu	Ile	Thr	Arg	Pro	Leu	Thr	Thr	Ala	Thr	Gly	Ser	Ala	Pro	Ala
1220						1225					1230			
Thr	Thr	Ala	Ala	Gly	Leu	Leu	His	Leu	Ser	Trp	Pro	Pro	His	Pro
1235						1240					1245			
Asp	Thr	Thr	Thr	Asp	Thr	Asp	Thr	Asp	Thr	Asp	Ala	Leu	Arg	Tyr
1250						1255					1260			
Gln	Val	Ile	Ala	Glu	Pro	Thr	Gln	Gln	Leu	Pro	Arg	Tyr	Leu	His
1265						1270					1275			
Asp	Leu	His	Thr	Ser	Thr	Asp	Leu	His	Thr	Ser	Thr	Thr	Glu	Ala
1280						1285					1290			
Asp	Val	Val	Val	Trp	Pro	Val	Pro	Val	Pro	Ser	Asn	Glu	Glu	Leu
1295						1300					1305			
Gln	Ala	His	Gln	Ala	Ser	Asp	Thr	Ala	Val	Ser	Ser	Arg	Ile	His
1310						1315					1320			
Thr	Leu	Thr	Arg	Gln	Thr	Leu	Thr	Val	Val	Gln	Asp	Trp	Leu	Thr
1325						1330					1335			
His	Pro	Asp	Thr	Thr	Gly	Thr	Arg	Leu	Val	Ile	Val	Thr	Arg	His
1340						1345					1350			
Gly	Val	Ser	Thr	Ser	Ala	His	Asp	Pro	Val	Pro	Asp	Leu	Ala	His
1355						1360					1365			
Ala	Ala	Val	Trp	Gly	Leu	Ile	Arg	Ser	Ala	Gln	Asn	Glu	His	Pro
1370						1375					1380			
Gly	Arg	Phe	Thr	Leu	Leu	Asp	Thr	Asp	Asp	Asn	Thr	Asn	Ser	Asp
1385						1390					1395			

Thr	Leu	Thr	Thr	Ala	Leu	Thr	Leu	Pro	Thr	Arg	Glu	Asn	Gln	Leu
1400						1405					1410			
Ala	Ile	Arg	Arg	Asp	Thr	Ile	His	Ile	Pro	Arg	Leu	Thr	Arg	His
1415						1420					1425			
Ser	Ser	Asp	Gly	Ala	Leu	Thr	Ala	Pro	Val	Val	Val	Asp	Pro	Glu
1430						1435					1440			
Gly	Thr	Val	Leu	Ile	Thr	Gly	Gly	Thr	Gly	Thr	Leu	Gly	Ala	Leu
1445						1450					1455			
Phe	Ala	Glu	His	Leu	Val	Ser	Ala	His	Gly	Val	Arg	His	Leu	Leu
1460						1465					1470			
Leu	Thr	Ser	Arg	Arg	Gly	Pro	Gln	Ala	His	Gly	Ala	Thr	Asp	Leu
1475						1480					1485			
Gln	Gln	Arg	Leu	Thr	Asp	Leu	Gly	Ala	His	Val	Thr	Ile	Thr	Ala
1490						1495					1500			
Cys	Asp	Ile	Ser	Asp	Pro	Glu	Ala	Leu	Ala	Ala	Leu	Val	Asn	Ser
1505						1510					1515			
Val	Pro	Thr	Gln	His	Arg	Leu	Thr	Ala	Val	Val	His	Thr	Ala	Ala
1520						1525					1530			
Val	Leu	Ala	Asp	Thr	Pro	Val	Thr	Glu	Leu	Thr	Gly	Asp	Gln	Leu
1535						1540					1545			
Asp	Gln	Val	Leu	Ala	Pro	Lys	Ile	Asp	Ala	Ala	Trp	Gln	Leu	His
1550						1555					1560			
Gln	Leu	Thr	Tyr	Glu	His	Asn	Leu	Ser	Ala	Phe	Ile	Met	Phe	Ser
1565						1570					1575			
Ser	Met	Ala	Gly	Met	Ile	Gly	Ser	Pro	Gly	Gln	Gly	Asn	Tyr	Ala
1580						1585					1590			
Ala	Ala	Asn	Thr	Ala	Leu	Asp	Ala	Leu	Ala	Asp	Tyr	Arg	His	Arg
1595						1600					1605			
Leu	Gly	Leu	Pro	Ala	Thr	Ser	Leu	Ala	Trp	Gly	Tyr	Trp	Gln	Thr
1610						1615					1620			

His Thr Gly Leu Thr Ala	His Leu Thr Asp Val Asp Leu Ala Arg
1625	1630 1635
Met Thr Arg Leu Gly Leu	Met Pro Ile Ala Thr Ser His Gly Leu
1640	1645 1650
Ala Leu Phe Asp Ala Ala	Leu Ala Thr Gly Gln Pro Val Ser Ile
1655	1660 1665
Pro Ala Pro Ile Asn Thr	His Thr Leu Ala Arg His Ala Arg Asp
1670	1675 1680
Asn Thr Leu Ala Pro Ile	Leu Ser Ala Leu Ile Thr Thr Pro Arg
1685	1690 1695
Arg Arg Ala Ala Ser Ala	Ala Thr Asp Leu Ala Ala Arg Leu Asn
1700	1705 1710
Gly Leu Ser Pro Gln Gln	Gln Gln Thr Leu Ala Thr Leu Val
1715	1720 1725
Ala Ala Ala Thr Ala Thr	Val Leu Gly His His Thr Pro Glu Ser
1730	1735 1740
Ile Ser Pro Ala Thr Ala	Phe Lys Asp Leu Gly Ile Asp Ser Leu
1745	1750 1755
Thr Ala Leu Glu Leu Arg	Asn Thr Leu Thr His Asn Thr Gly Leu
1760	1765 1770
Asn Leu Ser Ser Thr Leu	Ile Phe Asp His Pro Thr Pro His Ala
1775	1780 1785
Val Ala Glu His Leu Leu	Glu Gln Ile Pro Gly Ile Gly Ala Leu
1790	1795 1800
Val Pro Ala Pro Val Val	Ile Ala Ala Gly Arg Thr Glu Glu Pro
1805	1810 1815
Val Ala Val Val Gly Met	Ala Cys Arg Phe Pro Gly Gly Val Ala
1820	1825 1830
Ser Ala Asp Gln Leu Trp	Asp Leu Val Ile Ala Gly Arg Asp Val
1835	1840 1845



Val	Gly	Asn	Phe	Pro	Ala	Asp	Arg	Gly	Trp	Asp	Val	Glu	Gly	Leu
1850						1855					1860			
Phe	Asp	Pro	Asp	Pro	Asp	Ala	Val	Gly	Lys	Thr	Tyr	Thr	Arg	Tyr
1865						1870					1875			
Gly	Ala	Phe	Leu	Asp	Asp	Ala	Ala	Gly	Phe	Asp	Ala	Gly	Phe	Phe
1880						1885					1890			
Gly	Ile	Ser	Pro	Arg	Glu	Ala	Arg	Ala	Met	Asp	Pro	Gln	Gln	Arg
1895						1900					1905			
Leu	Leu	Leu	Glu	Val	Cys	Trp	Glu	Ala	Leu	Glu	Thr	Ala	Gly	Ile
1910						1915					1920			
Pro	Ala	His	Thr	Leu	Ala	Gly	Thr	Ser	Thr	Gly	Val	Phe	Val	Gly
1925						1930					1935			
Ala	Trp	Ala	Gln	Ser	Tyr	Gly	Ala	Thr	Asn	Ser	Asp	Asp	Ala	Glu
1940						1945					1950			
Gly	Tyr	Ala	Met	Thr	Gly	Gly	Ala	Thr	Ser	Val	Met	Ser	Gly	Arg
1955						1960					1965			
Ile	Ala	Tyr	Thr	Leu	Gly	Leu	Glu	Gly	Pro	Ala	Ile	Thr	Val	Asp
1970						1975					1980			
Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Ile	His	Leu	Ala	Cys	Gln
1985						1990					1995			
Ser	Leu	Arg	Asn	Asn	Glu	Ser	Gln	Leu	Ala	Leu	Ala	Gly	Gly	Val
2000						2005					2010			
Thr	Val	Met	Ser	Thr	Pro	Ala	Val	Phe	Thr	Glu	Phe	Ser	Arg	Gln
2015						2020					2025			
Arg	Gly	Leu	Ala	Pro	Asp	Gly	Arg	Cys	Lys	Ala	Phe	Ala	Ala	Thr
2030						2035					2040			
Ala	Asp	Gly	Thr	Gly	Trp	Gly	Glu	Gly	Ala	Ala	Val	Leu	Val	Leu
2045						2050					2055			
Glu	Arg	Leu	Ser	Glu	Ala	Arg	Arg	Asn	Asn	His	Pro	Val	Leu	Ala
2060						2065					2070			

Ile Val 2075	Ala Gly Ser Ala	Ile Asn Gln Asp Gly 2080	Ala Ser Asn Gly 2085
Leu Thr 2090	Ala Pro His Gly	Pro Ser Gln Gln Arg 2095	Val Ile Asn Gln 2100
Ala Leu 2105	Ala Asn Ala Gly	Leu Thr His Asp Gln 2110	Val Asp Ala Val 2115
Glu Ala 2120	His Gly Thr Gly	Thr Thr Leu Gly Asp 2125	Pro Ile Glu Ala 2130
Ser Ala 2135	Leu His Ala Thr	Tyr Gly His His His 2140	Thr Pro Asp Gln 2145
Pro Leu 2150	Trp Leu Gly Ser	Ile Lys Ser Asn Ile 2155	Gly His Thr Gln 2160
Ala Ala 2165	Ala Gly Ala Ala	Gly Val Val Lys Met 2170	Ile Gln Ala Ile 2175
Thr His 2180	Ala Thr Leu Pro	Ala Thr Leu His Val 2185	Asp Gln Pro Ser 2190
Pro His 2195	Ile Asp Trp Ser	Ser Gly Thr Val Arg 2200	Leu Leu Thr Glu 2205
Pro Ile 2210	Gln Trp Pro Asn	Thr Asp His Pro Arg 2215	Thr Ala Ala Val 2220
Ser Ser 2225	Phe Gly Ile Ser	Gly Thr Asn Ala His 2230	Leu Ile Leu Gln 2235
Gln Pro 2240	Pro Thr Pro Asn	Pro Thr Gln Thr Pro 2245	Glu Asp Cys Ser 2250
Pro Ala 2255	Gln Ser Pro Cys	Ala Thr Ile Thr Asp 2260	Ala Gly Thr Gly 2265
Leu Ser 2270	Phe Val Pro Trp	Val Ile Ser Ala Lys 2275	Ser Ala Glu Ala 2280
Leu Ser 2285	Ala Gln Ala Ser	Arg Leu Leu Thr Arg 2290	Leu Asp Asp Asp 2295

Pro	Val	Val	Asp	Ala	Ile	Asp	Leu	Gly	Trp	Ser	Leu	Ile	Ala	Thr
	2300					2305					2310			
Arg	Ser	Met	Phe	Glu	His	Arg	Ala	Val	Val	Val	Gly	Ala	Asp	Arg
	2315					2320					2325			
His	Gln	Leu	Gln	Arg	Gly	Leu	Ala	Glu	Leu	Ala	Ser	Gly	Asn	Leu
	2330					2335					2340			
Gly	Ala	Asp	Val	Val	Val	Gly	Arg	Ala	Arg	Ala	Ala	Gly	Glu	Thr
	2345					2350					2355			
Val	Met	Val	Phe	Pro	Gly	Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met	Gly
	2360					2365					2370			
Ala	Gln	Leu	Tyr	Glu	Gln	Phe	Pro	Val	Phe	Ala	Ala	Ala	Phe	Asp
	2375					2380					2385			
Asp	Val	Val	Asp	Ala	Leu	Asp	Gln	Tyr	Leu	Arg	Leu	Pro	Leu	Arg
	2390					2395					2400			
Gln	Val	Met	Trp	Gly	Asp	Asp	Glu	Gly	Leu	Leu	Asn	Ser	Thr	Glu
	2405					2410					2415			
Phe	Ala	Gln	Pro	Ser	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Ala
	2420					2425					2430			
Leu	Leu	Arg	Phe	Trp	Gly	Val	Val	Pro	Asp	Tyr	Val	Ile	Gly	His
	2435					2440					2445			
Ser	Val	Gly	Glu	Leu	Ala	Ala	Ala	Gln	Val	Ala	Gly	Val	Leu	Ser
	2450					2455					2460			
Leu	Gln	Asp	Ala	Ala	Lys	Leu	Val	Ser	Ala	Arg	Gly	Arg	Leu	Met
	2465					2470					2475			
Gln	Ala	Leu	Pro	Ala	Gly	Gly	Ala	Met	Val	Ala	Val	Ala	Ala	Ser
	2480					2485					2490			
Gln	His	Glu	Val	Glu	Pro	Leu	Leu	Val	Glu	Gly	Val	Asp	Ile	Ala
	2495					2500					2505			
Ala	Leu	Asn	Ala	Pro	Gly	Ser	Val	Val	Ile	Ser	Gly	Asp	Gln	Ala
	2510					2515					2520			

Ala Val	Arg Leu Ile	Ala Asn	Arg Leu Ala	Asp Arg	Gly Tyr Arg
2525		2530		2535	
Ala His	Glu Leu Ala Val	Ser His	Ala Phe His	Ser Ser	Leu Met
2540		2545		2550	
Glu Pro	Met Leu Glu Glu	Phe Ala	Arg Leu Ala	Ser Glu	Ile Val
2555		2560		2565	
Val Glu	Gln Pro Gln Ile	Pro Leu	Ile Ser Asn	Val Thr	Gly Gln
2570		2575		2580	
Leu Ala	Asn Ala Asp Tyr	Gly Ser	Ala Gly Tyr	Trp Val	Asp His
2585		2590		2595	
Ile Arg	Arg Pro Val Arg	Phe Ala	Asp Ser Val	Ala Ser	Leu Glu
2600		2605		2610	
Ala Met	Gly Ala Ser Cys	Phe Ile	Glu Val Gly	Pro Ala	Ser Gly
2615		2620		2625	
Leu Gly	Ala Ala Ile Glu	Gln Ser	Leu Lys Ser	Ala Glu	Pro Thr
2630		2635		2640	
Val Ser	Val Ser Ala Leu	Ser Thr	Asp Lys Pro	Glu Ser	Val Ala
2645		2650		2655	
Val Leu	Arg Ala Ala Ala	Arg Leu	Ser Thr Ser	Gly Ile	Pro Val
2660		2665		2670	
Asp Trp	Gln Ser Val Phe	Asp Gly	Arg Ser Thr	Gln Thr	Val Asn
2675		2680		2685	
Leu Pro	Thr Tyr Ala Phe	Gln Arg	Gln Arg Phe	Trp Leu	Asp Ala
2690		2695		2700	
Asn Arg	Ile Gly Gln Gly	Asp Pro	Ala Ser Gln	Pro Gln	Ala Gln
2705		2710		2715	
Asn Val	Glu Ser Arg Phe	Trp Glu	Ala Val Glu	Arg Glu	Asp Val
2720		2725		2730	
Asp Gly	Leu Ala Asp Ser	Ile Gly	Val Thr Ala	Ser Ala	Met Gln
2735		2740		2745	
Thr Val	Leu Pro Ala Leu	Ser Ser	Trp Arg Arg	Ala Glu	Arg Thr

2750		2755		2760
Gln Ser Glu Leu Asp Ser Trp Arg Tyr Gln Val Thr Trp Leu Ser				
2765		2770		2775
Ser Pro Ala Thr Pro Ser Ser Ile Thr Leu Ser Gly Ile Trp Leu				
2780		2785		2790
Leu Ile Val Pro Ser Glu Leu Ala Lys Thr Asp Pro Val Ile Gly				
2795		2800		2805
Cys Ala Ala Ala Leu Glu Ala His Gly Ala Leu Val Thr Ile Ile				
2810		2815		2820
Thr Ile Phe Glu Pro Asp Phe Asn Arg Ser Leu Met Gly Ala Ser				
2825		2830		2835
Leu Lys Asp Ile Gly Ser His Ile Ser Gly Val Ile Ser Phe Leu				
2840		2845		2850
Gly Ile His Gly Ser Glu Phe Ser Asp Ser Gly Ala Val Lys Thr				
2855		2860		2865
Leu Asn Leu Val Gln Ala Met Gly Asp Val His Leu Asp Val Pro				
2870		2875		2880
Leu Trp Cys Leu Thr Gln Gly Ala Val Ser Ile Ser Ala Asp Asp				
2885		2890		2895
Leu Ile Arg Cys Ser Ser Ala Ala Leu Val Trp Gly Leu Gly Arg				
2900		2905		2910
Val Val Ala Leu Glu His Pro Gly Ser Trp Gly Gly Leu Val Asp				
2915		2920		2925
Leu Pro Glu Ser Pro Asp Asp Ala Ala Trp Glu Arg Leu Cys Ala				
2930		2935		2940
Leu Leu Ala Gln Pro Thr Asp Glu Asp Gln Phe Ala Ile Arg Pro				
2945		2950		2955
Ser Gly Val Phe Leu Arg Arg Leu Ile His Ala Pro Ala Thr Thr				
2960		2965		2970
Thr Ser Lys Ser Ser Thr Ala Trp Ala Pro Arg Gly Thr Val Leu				
2975		2980		2985

Ile	Thr	Gly	Gly	Thr	Gly	Ala	Leu	Gly	Ala	His	Val	Ala	Arg	Trp
2990						2995					3000			
Leu	Ala	His	Lys	Tyr	Glu	Ser	Val	Asp	Leu	Leu	Leu	Thr	Ser	Arg
3005						3010					3015			
Arg	Gly	Met	Ala	Ala	Asp	Gly	Ala	Thr	Glu	Leu	Val	Asp	Asp	Leu
3020						3025					3030			
Arg	Thr	Ala	Gly	Ala	Ser	Val	Thr	Val	His	Ala	Cys	Asp	Val	Thr
3035						3040					3045			
Asp	Arg	Thr	Ser	Val	Glu	Ala	Ala	Ile	Ala	Gly	Lys	Ser	Leu	Asp
3050						3055					3060			
Ala	Val	Phe	His	Leu	Ala	Gly	Arg	His	Gln	Pro	Thr	Leu	Leu	Thr
3065						3070					3075			
Glu	Leu	Glu	Asp	Glu	Ser	Phe	Ser	Asp	Glu	Leu	Ala	Pro	Lys	Val
3080						3085					3090			
His	Gly	Ala	Gln	Val	Leu	Ser	Asp	Ile	Thr	Ser	Asn	Leu	Thr	Leu
3095						3100					3105			
Ser	Ala	Phe	Val	Met	Phe	Ser	Ser	Val	Ala	Gly	Ile	Trp	Gly	Gly
3110						3115					3120			
Lys	Ser	Gln	Gly	Ala	Tyr	Ala	Ala	Ala	Asn	Ala	Phe	Leu	Asp	Ser
3125						3130					3135			
Leu	Ala	Glu	Lys	Arg	Arg	Thr	Leu	Gly	Leu	Pro	Ala	Thr	Ser	Val
3140						3145					3150			
Ala	Trp	Gly	Leu	Trp	Ala	Gly	Gly	Gly	Met	Gly	Asp	Arg	Pro	Ser
3155						3160					3165			
Ala	Ser	Gly	Leu	Asn	Leu	Ile	Gly	Leu	Lys	Ser	Met	Ser	Ala	Asp
3170						3175					3180			
Leu	Ala	Val	Gln	Ala	Leu	Ser	Asp	Ala	Ile	Asp	Arg	Pro	Gln	Ala
3185						3190					3195			
Thr	Leu	Thr	Val	Ala	Ser	Val	Asn	Trp	Asp	Arg	Phe	Tyr	Pro	Thr
3200						3205					3210			

Phe	Ala	Leu	Ala	Arg	Pro	Arg	Pro	Phe	Leu	His	Glu	Ile	Thr	Glu
3215						3220					3225			
Val	Met	Ala	Tyr	Arg	Glu	Ser	Met	Arg	Ser	Ser	Ser	Ala	Ser	Thr
3230						3235					3240			
Ala	Thr	Leu	Leu	Thr	Ser	Lys	Leu	Ala	Gly	Leu	Thr	Ala	Thr	Glu
3245						3250					3255			
Gln	Arg	Ala	Val	Thr	Arg	Lys	Leu	Val	Leu	Asp	Gln	Ala	Ala	Ser
3260						3265					3270			
Val	Leu	Gly	Tyr	Ala	Ser	Thr	Glu	Ser	Leu	Asp	Thr	His	Glu	Ser
3275						3280					3285			
Phe	Lys	Asp	Leu	Gly	Phe	Asp	Ser	Leu	Thr	Ala	Leu	Glu	Leu	Arg
3290						3295					3300			
Asp	His	Leu	Gln	Thr	Ala	Thr	Gly	Leu	Asn	Leu	Ser	Ser	Thr	Leu
3305						3310					3315			
Ile	Phe	Asp	His	Pro	Thr	Pro	His	Ala	Val	Ala	Glu	His	Leu	Leu
3320						3325					3330			
Glu	Gln	Ile	Pro	Gly	Ile	Gly	Ala	Leu	Val	Pro	Ala	Pro	Val	Val
3335						3340					3345			
Ile	Ala	Ala	Gly	Arg	Thr	Glu	Glu	Pro	Val	Ala	Val	Val	Gly	Met
3350						3355					3360			
Ala	Cys	Arg	Phe	Pro	Gly	Gly	Val	Ala	Ser	Ala	Asp	Gln	Leu	Trp
3365						3370					3375			
Asp	Leu	Val	Ile	Ala	Gly	Arg	Asp	Val	Val	Gly	Asn	Phe	Pro	Ala
3380						3385					3390			
Asp	Arg	Gly	Trp	Asp	Val	Glu	Gly	Leu	Phe	Asp	Pro	Asp	Pro	Asp
3395						3400					3405			
Ala	Val	Gly	Lys	Thr	Tyr	Thr	Arg	Tyr	Gly	Ala	Phe	Leu	Asp	Asp
3410						3415					3420			
Ala	Ala	Gly	Phe	Asp	Ala	Gly	Phe	Phe	Gly	Ile	Ser	Pro	Arg	Glu
3425						3430					3435			

Ala Arg 3440	Ala Met Asp Pro	Gln 3445	Gln Arg Leu Leu Leu	Glu Val Cys 3450
Trp Glu 3455	Ala Leu Glu Thr	Ala 3460	Gly Ile Pro Ala His	Thr Leu Ala 3465
Gly Thr 3470	Ser Thr Gly Val	Phe 3475	Val Gly Ala Trp Ala	Gln Ser Tyr 3480
Gly Ala 3485	Thr Asn Ser Asp	Asp 3490	Ala Glu Gly Tyr Ala	Met Thr Gly 3495
Gly Ala 3500	Thr Ser Val Met	Ser 3505	Gly Arg Ile Ala Tyr	Thr Leu Gly 3510
Leu Glu 3515	Gly Pro Ala Ile	Thr 3520	Val Asp Thr Ala Cys	Ser Ser Ser 3525
Leu Val 3530	Ala Ile His Leu	Ala 3535	Cys Gln Ser Leu Arg	Asn Asn Glu 3540
Ser Gln 3545	Leu Ala Leu Ala	Gly 3550	Gly Val Thr Val Met	Ser Thr Pro 3555
Ala Val 3560	Phe Thr Glu Phe	Ser 3565	Arg Gln Arg Gly Leu	Ala Pro Asp 3570
Gly Arg 3575	Cys Lys Ala Phe	Ala 3580	Ala Thr Ala Asp Gly	Thr Gly Trp 3585
Gly Glu 3590	Gly Ala Ala Val	Leu 3595	Val Leu Glu Arg Leu	Ser Glu Ala 3600
Arg Arg 3605	Asn Asn His Pro	Val 3610	Leu Ala Ile Val Ala	Gly Ser Ala 3615
Ile Asn 3620	Gln Asp Gly Ala	Ser 3625	Asn Gly Leu Thr Ala	Pro His Gly 3630
Pro Ser 3635	Gln Gln Arg Val	Ile 3640	Asn Gln Ala Leu Ala	Asn Ala Gly 3645
Leu Thr 3650	His Asp Gln Val	Asp 3655	Ala Val Glu Ala His	Gly Thr Gly 3660



Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu	Ala	Ser	Ala	Leu	His	Ala	Thr
3665						3670					3675			
Tyr	Gly	His	His	His	Thr	Pro	Asp	Gln	Pro	Leu	Trp	Leu	Gly	Ser
3680						3685					3690			
Ile	Lys	Ser	Asn	Ile	Gly	His	Thr	Gln	Ala	Ala	Ala	Gly	Ala	Ala
3695						3700					3705			
Gly	Val	Val	Lys	Met	Ile	Gln	Ala	Ile	Thr	His	Ala	Thr	Leu	Pro
3710						3715					3720			
Ala	Thr	Leu	His	Val	Asp	Gln	Pro	Ser	Pro	His	Ile	Asp	Trp	Ser
3725						3730					3735			
Ser	Gly	Thr	Val	Arg	Leu	Leu	Thr	Glu	Pro	Ile	Gln	Trp	Pro	Asn
3740						3745					3750			
Thr	Asp	His	Pro	Arg	Thr	Ala	Ala	Val	Ser	Ser	Phe	Gly	Ile	Ser
3755						3760					3765			
Gly	Thr	Asn	Ala	His	Leu	Ile	Leu	Gln	Gln	Pro	Pro	Thr	Pro	Asn
3770						3775					3780			
Pro	Thr	Gln	Thr	Pro	Glu	Asp	Cys	Ser	Pro	Ala	Gln	Ser	Pro	Cys
3785						3790					3795			
Ala	Thr	Ile	Thr	Asp	Ala	Gly	Thr	Gly	Leu	Ser	Phe	Val	Pro	Trp
3800						3805					3810			
Val	Ile	Ser	Ala	Lys	Ser	Ala	Glu	Ala	Leu	Ser	Ala	Gln	Ala	Ser
3815						3820					3825			
Arg	Leu	Leu	Thr	Arg	Leu	Asp	Asp	Asp	Pro	Val	Val	Asp	Ala	Ile
3830						3835					3840			
Asp	Leu	Gly	Trp	Ser	Leu	Ile	Ala	Thr	Arg	Ser	Met	Phe	Glu	His
3845						3850					3855			
Arg	Ala	Val	Val	Val	Gly	Ala	Asp	Arg	His	Gln	Leu	Gln	Arg	Gly
3860						3865					3870			
Leu	Ala	Glu	Leu	Ala	Ser	Gly	Asn	Leu	Gly	Ala	Asp	Val	Val	Val
3875						3880					3885			

Gly	Arg	Ala	Arg	Ala	Ala	Gly	Glu	Thr	Val	Met	Val	Phe	Pro	Gly
3890						3895					3900			
Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met	Gly	Ala	Gln	Leu	Tyr	Glu	Gln
3905						3910					3915			
Phe	Pro	Val	Phe	Ala	Ala	Ala	Phe	Asp	Asp	Val	Val	Asp	Ala	Leu
3920						3925					3930			
Asp	Gln	Tyr	Leu	Arg	Leu	Pro	Leu	Arg	Gln	Val	Met	Trp	Gly	Asp
3935						3940					3945			
Asp	Glu	Gly	Leu	Leu	Asn	Ser	Thr	Glu	Phe	Ala	Gln	Pro	Ser	Leu
3950						3955					3960			
Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Ala	Leu	Leu	Arg	Phe	Trp	Gly
3965						3970					3975			
Val	Val	Pro	Asp	Tyr	Val	Ile	Gly	His	Ser	Val	Gly	Glu	Leu	Ala
3980						3985					3990			
Ala	Ala	Gln	Val	Ala	Gly	Val	Leu	Ser	Leu	Gln	Asp	Ala	Ala	Lys
3995						4000					4005			
Leu	Val	Ser	Ala	Arg	Gly	Arg	Leu	Met	Gln	Ala	Leu	Pro	Ala	Gly
4010						4015					4020			
Gly	Ala	Met	Val	Ala	Val	Ala	Ala	Ser	Gln	His	Glu	Val	Glu	Pro
4025						4030					4035			
Leu	Leu	Val	Glu	Gly	Val	Asp	Ile	Ala	Ala	Leu	Asn	Ala	Pro	Gly
4040						4045					4050			
Ser	Val	Val	Ile	Ser	Gly	Asp	Gln	Ala	Ala	Val	Arg	Leu	Ile	Ala
4055						4060					4065			
Asn	Arg	Leu	Ala	Asp	Arg	Gly	Tyr	Arg	Ala	His	Glu	Leu	Ala	Val
4070						4075					4080			
Ser	His	Ala	Phe	His	Ser	Ser	Leu	Met	Glu	Pro	Met	Leu	Glu	Glu
4085						4090					4095			
Phe	Ala	Arg	Leu	Ala	Ser	Glu	Ile	Val	Val	Glu	Gln	Pro	Gln	Ile
4100						4105					4110			

Pro	Leu	Ile	Ser	Asn	Val	Thr	Gly	Gln	Leu	Ala	Asn	Ala	Asp	Tyr
4115						4120					4125			
Gly	Ser	Ala	Gly	Tyr	Trp	Val	Asp	His	Ile	Arg	Arg	Pro	Val	Arg
4130						4135					4140			
Phe	Ala	Asp	Ser	Val	Ala	Ser	Leu	Glu	Ala	Met	Gly	Ala	Ser	Cys
4145						4150					4155			
Phe	Ile	Glu	Val	Gly	Pro	Ala	Ser	Gly	Leu	Gly	Ala	Ala	Ile	Glu
4160						4165					4170			
Gln	Ser	Leu	Lys	Ser	Ala	Glu	Pro	Thr	Val	Ser	Val	Ser	Ala	Leu
4175						4180					4185			
Ser	Thr	Asp	Lys	Pro	Glu	Ser	Val	Ala	Val	Leu	Arg	Ala	Ala	Ala
4190						4195					4200			
Arg	Leu	Ser	Thr	Ser	Gly	Ile	Pro	Val	Asp	Trp	Gln	Ser	Val	Phe
4205						4210					4215			
Asp	Gly	Arg	Ser	Thr	Gln	Thr	Val	Asn	Leu	Pro	Thr	Tyr	Ala	Phe
4220						4225					4230			
Gln	Arg	Gln	Arg	Phe	Trp	Leu	Asp	Ala	Asn	Arg	Ile	Gly	Gln	Gly
4235						4240					4245			
Asp	Pro	Ala	Ser	Gln	Pro	Gln	Ala	Gln	Asn	Val	Glu	Ser	Arg	Phe
4250						4255					4260			
Trp	Glu	Ala	Val	Glu	Arg	Glu	Asp	Val	Asp	Gly	Leu	Ala	Asp	Ser
4265						4270					4275			
Ile	Gly	Val	Thr	Ala	Ser	Ala	Met	Gln	Thr	Val	Leu	Pro	Ala	Leu
4280						4285					4290			
Ser	Ser	Trp	Arg	Arg	Ala	Glu	Arg	Thr	Gln	Ser	Glu	Leu	Asp	Ser
4295						4300					4305			
Trp	Arg	Tyr	Gln	Val	Thr	Trp	Leu	Ser	Ser	Pro	Ala	Thr	Pro	Ser
4310						4315					4320			
Ser	Ile	Thr	Leu	Ser	Gly	Ile	Trp	Leu	Leu	Ile	Val	Pro	Ser	Glu
4325						4330					4335			
Leu	Ala	Lys	Thr	Asp	Pro	Val	Ile	Gly	Cys	Ala	Ala	Ala	Leu	Glu

4340						4345						4350							
Ala	His	Gly	Ala	Leu	Val	Thr	Ile	Ile	Thr	Ile	Phe	Glu	Pro	Asp					
4355						4360					4365								
Phe	Asn	Arg	Ser	Leu	Met	Gly	Ala	Ser	Leu	Lys	Asp	Ile	Gly	Ser					
4370						4375					4380								
His	Ile	Ser	Gly	Val	Ile	Ser	Phe	Leu	Gly	Ile	His	Gly	Ser	Glu					
4385						4390					4395								
Phe	Ser	Asp	Ser	Gly	Ala	Val	Lys	Thr	Leu	Asn	Leu	Val	Gln	Ala					
4400						4405					4410								
Met	Gly	Asp	Val	His	Leu	Asp	Val	Pro	Leu	Trp	Cys	Leu	Thr	Gln					
4415						4420					4425								
Gly	Ala	Val	Ser	Ile	Ser	Ala	Asp	Asp	Leu	Ile	Arg	Cys	Ser	Ser					
4430						4435					4440								
Ala	Ala	Leu	Val	Trp	Gly	Leu	Gly	Arg	Val	Val	Ala	Leu	Glu	His					
4445						4450					4455								
Pro	Gly	Ser	Trp	Gly	Gly	Leu	Val	Asp	Leu	Pro	Glu	Ser	Pro	Asp					
4460						4465					4470								
Asp	Ala	Ala	Trp	Glu	Arg	Leu	Cys	Ala	Leu	Leu	Ala	Gln	Pro	Thr					
4475						4480					4485								
Asp	Glu	Asp	Gln	Phe	Ala	Ile	Arg	Pro	Ser	Gly	Val	Phe	Leu	Arg					
4490						4495					4500								
Arg	Leu	Ile	His	Ala	Pro	Ala	Thr	Thr	Thr	Ser	Lys	Ser	Ser	Thr					
4505						4510					4515								
Ala	Trp	Ala	Pro	Arg	Gly	Thr	Val	Leu	Ile	Thr	Gly	Gly	Thr	Gly					
4520						4525					4530								
Ala	Leu	Gly	Ala	His	Val	Ala	Arg	Trp	Leu	Ala	His	Lys	Tyr	Glu					
4535						4540					4545								
Ser	Val	Asp	Leu	Leu	Leu	Thr	Ser	Arg	Arg	Gly	Met	Ala	Ala	Asp					
4550						4555					4560								
Gly	Ala	Thr	Glu	Leu	Val	Asp	Asp	Leu	Arg	Thr	Ala	Gly	Ala	Ser					
4565						4570					4575								

Val Thr	Val His Ala Cys Asp	Val Thr Asp Arg Thr	Ser Val Glu
4580	4585	4590	
Ala Ala	Ile Ala Gly Lys Ser	Leu Asp Ala Val Phe	His Leu Ala
4595	4600	4605	
Gly Arg	His Gln Pro Thr Leu	Leu Thr Glu Leu Glu	Asp Glu Ser
4610	4615	4620	
Phe Ser	Asp Glu Leu Ala Pro	Lys Val His Gly Ala	Gln Val Leu
4625	4630	4635	
Ser Asp	Ile Thr Ser Asn Leu	Thr Leu Ser Ala Phe	Val Met Phe
4640	4645	4650	
Ser Ser	Val Ala Gly Ile Trp	Gly Gly Lys Ser Gln	Gly Ala Tyr
4655	4660	4665	
Ala Ala	Ala Asn Ala Phe Leu	Asp Ser Leu Ala Glu	Lys Arg Arg
4670	4675	4680	
Thr Leu	Gly Leu Pro Ala Thr	Ser Val Ala Trp Gly	Leu Trp Ala
4685	4690	4695	
Gly Gly	Gly Met Gly Asp Arg	Pro Ser Ala Ser Gly	Leu Asn Leu
4700	4705	4710	
Ile Gly	Leu Lys Ser Met Ser	Ala Asp Leu Ala Val	Gln Ala Leu
4715	4720	4725	
Ser Asp	Ala Ile Asp Arg Pro	Gln Ala Thr Leu Thr	Val Ala Ser
4730	4735	4740	
Val Asn	Trp Asp Arg Phe Tyr	Pro Thr Phe Ala Leu	Ala Arg Pro
4745	4750	4755	
Arg Pro	Phe Leu His Glu Ile	Thr Glu Val Met Ala	Tyr Arg Glu
4760	4765	4770	
Ser Met	Arg Ser Ser Ser Ala	Ser Thr Ala Thr Leu	Leu Thr Ser
4775	4780	4785	
Lys Leu	Ala Gly Leu Thr Ala	Thr Glu Gln Arg Ala	Val Thr Arg
4790	4795	4800	

Lys Leu Val Leu Asp Gln Ala Ala Ser Val Leu Gly Tyr Ala Ser  
 4805 4810 4815

Thr Glu Ser Leu Asp Thr His Glu Ser Phe Lys Asp Leu Gly Phe  
 4820 4825 4830

Asp Ser Leu Thr Ala Leu Glu Leu Arg Asp His Leu Gln Thr Ala  
 4835 4840 4845

Thr Gly Leu Asn Leu Ser Ser Thr Leu Ile Phe Asp His Pro Thr  
 4850 4855 4860

Pro His Ala Val Ala Glu His Leu Leu Glu Gln Ile Pro Gly Ile  
 4865 4870 4875

Gly Ala Leu Val Pro Ala Pro Val Val Ile Ala Ala Gly Arg Thr  
 4880 4885 4890

Glu Glu Pro Val Ala Val Val Gly Met Ala Cys Arg Phe Pro Gly  
 4895 4900 4905

Gly Val Ala Ser Ala Asp Gln Leu Trp Asp Leu Val Ile Ala Gly  
 4910 4915 4920

Arg Asp Val Val Gly Asn Phe Pro Ala Asp Arg Gly Trp Asp Val  
 4925 4930 4935

Glu Gly Leu Phe Asp Pro Asp Pro Asp Ala Val Gly Lys Thr Tyr  
 4940 4945 4950

Thr Arg Tyr Gly Ala Phe Leu Asp Asp Ala Ala Gly Phe Asp Ala  
 4955 4960 4965

Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Arg Ala Met Asp Pro  
 4970 4975 4980

Gln Gln Arg Leu Leu Leu Glu Val Cys Trp Glu Ala Leu Glu Thr  
 4985 4990 4995

Ala Gly Ile Pro Ala His Thr Leu Ala Gly Thr Ser Thr Gly Val  
 5000 5005 5010

Phe Val Gly Ala Trp Ala Gln Ser Tyr Gly Ala Thr Asn Ser Asp  
 5015 5020 5025

Asp	Ala	Glu	Gly	Tyr	Ala	Met	Thr	Gly	Gly	Ala	Ile	Ser	Val	Met
5030						5035					5040			
Ser	Gly	Arg	Ile	Ala	Tyr	Thr	Leu	Gly	Leu	Glu	Gly	Pro	Ala	Ile
5045						5050					5055			
Thr	Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Ile	His	Leu
5060						5065					5070			
Ala	Cys	Gln	Ser	Leu	Arg	Asn	Asn	Glu	Ser	Gln	Leu	Ala	Leu	Thr
5075						5080					5085			
Gly	Gly	Val	Thr	Val	Met	Ser	Thr	Pro	Ala	Ile	Phe	Thr	Glu	Phe
5090						5095					5100			
Ser	Arg	Gln	Arg	Gly	Leu	Ala	Pro	Asp	Gly	Arg	Cys	Lys	Ala	Phe
5105						5110					5115			
Ala	Ala	Thr	Ala	Asp	Gly	Thr	Gly	Trp	Gly	Glu	Gly	Ala	Ala	Val
5120						5125					5130			
Leu	Val	Leu	Glu	Arg	Leu	Ser	Glu	Ala	Arg	Arg	Asn	Asn	His	Pro
5135						5140					5145			
Val	Leu	Ala	Ile	Val	Ala	Gly	Ser	Ala	Ile	Asn	Gln	Asp	Gly	Ala
5150						5155					5160			
Ser	Asn	Gly	Leu	Thr	Ala	Pro	His	Gly	Pro	Ser	Gln	Gln	Arg	Val
5165						5170					5175			
Ile	Asn	Gln	Ala	Leu	Ala	Asn	Ala	Gly	Leu	Thr	His	Asp	Gln	Val
5180						5185					5190			
Asp	Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro
5195						5200					5205			
Ile	Glu	Ala	Ser	Ala	Leu	His	Ala	Thr	Tyr	Gly	His	His	His	Thr
5210						5215					5220			
Pro	Asp	Gln	Pro	Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile	Gly
5225						5230					5235			
His	Thr	Gln	Ala	Ala	Ala	Gly	Ala	Ala	Gly	Val	Val	Lys	Met	Ile
5240						5245					5250			
Gln	Ala	Ile	Thr	His	Ala	Thr	Leu	Pro	Ala	Thr	Leu	His	Val	Asp

5255		5260		5265	
Gln Pro Ser Pro His Ile Asp Trp Ser Ser Gly Thr Val Arg Leu					
5270		5275		5280	
Leu Thr Glu Pro Ile Gln Trp Pro Asn Thr Asp His Pro Arg Thr					
5285		5290		5295	
Ala Ala Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala His Leu					
5300		5305		5310	
Ile Leu Gln Gln Pro Pro Thr Pro Asp Thr Thr Gln Thr Pro Asn					
5315		5320		5325	
Thr Thr Thr Gly Ser Asp Pro Ala Val Gly Ser Asp Pro Ala Val					
5330		5335		5340	
Gly Val Leu Val Trp Pro Leu Ser Ala Arg Ser Ala Pro Gly Leu					
5345		5350		5355	
Ser Ala Gln Ala Ala Arg Leu Tyr Gln His Leu Ser Ala His Pro					
5360		5365		5370	
Asp Leu Asp Pro Ile Asp Val Ala His Ser Leu Ala Thr Thr Arg					
5375		5380		5385	
Ser His His Pro His Arg Ala Thr Ile Thr Thr Ser Ile Glu His					
5390		5395		5400	
His Ser Glu Asn Asn His Asp Thr Thr Asp Ala Leu Ala Ala Leu					
5405		5410		5415	
His Ala Leu Ala Asn Asn Gly Thr His Pro Leu Leu Ser Arg Gly					
5420		5425		5430	
Leu Leu Thr Pro Gln Gly Pro Gly Lys Thr Val Phe Val Phe Pro					
5435		5440		5445	
Gly Gln Gly Ser Gln Tyr Pro Gly Met Gly Ala Asp Leu Tyr Arg					
5450		5455		5460	
Gln Phe Pro Val Phe Ala His Ala Leu Asp Ala Cys Asp Ala Ala					
5465		5470		5475	
Leu Gln Pro Phe Thr Gly Trp Ser Val Leu Ala Val Leu His Asp					



5480		5485		5490
Glu Pro Glu Ala Pro Ser Leu	Glu Arg Val Asp Val	Val Gln Pro		
5495	5500	5505		
Val Leu Phe Ser Val Met Val	Ser Leu Ala Ala Leu	Trp Arg Trp		
5510	5515	5520		
Ala Gly Ile Thr Pro Asp Ala	Val Ile Gly His Ser	Gln Gly Glu		
5525	5530	5535		
Ile Ala Ala Ala His Val Ala	Gly Ala Leu Thr Leu	Pro Glu Ala		
5540	5545	5550		
Ala Ala Val Val Ala Leu Arg	Ser Arg Val Leu Thr	Asp Leu Ala		
5555	5560	5565		
Gly Ala Gly Ala Met Ala Ser	Val Leu Ser Pro Glu	Glu Pro Leu		
5570	5575	5580		
Thr Gln Leu Leu Ala Arg Trp	Asp Gly Lys Ile Thr	Val Ala Ala		
5585	5590	5595		
Val Asn Gly Pro Ala Ser Ala	Val Val Ser Gly Asp	Thr Thr Ala		
5600	5605	5610		
Ile Thr Glu Leu Leu Ile Thr	Cys Glu His Glu Asn	Ile Asp Ala		
5615	5620	5625		
Arg Ala Ile Pro Val Asp Tyr	Pro Ser His Ser Pro	Tyr Met Glu		
5630	5635	5640		
His Ile Arg His Gln Phe Leu	Asp Glu Leu Pro Glu	Leu Thr Pro		
5645	5650	5655		
Arg Pro Ser Thr Ile Ala Met	Tyr Ser Thr Val Asp	Gly Glu Pro		
5660	5665	5670		
His Asp Thr Ala Tyr Asp Thr	Thr Thr Met Thr Ala	Asp Tyr Trp		
5675	5680	5685		
Tyr Arg Asn Ile Arg Asn Thr	Val Arg Phe His Asp	Thr Val Ala		
5690	5695	5700		
Ala Leu Leu Gly Ala Gly Glu	Gln Val Phe Leu Glu	Leu Ser Pro		

5705

5710

5715

His Pro Val Leu Thr Gln Ala Ile Thr Asp Thr Val Glu Gln Ala  
5720 5725 5730

Gly Gly Gly Gly Ala Ala Val Pro Ala Leu Arg Lys Asp Arg Pro  
5735 5740 5745

Asp Ala Val Ala Phe Ala Ala Ala Leu Gly Gln Leu His Cys His  
5750 5755 5760

Gly Ile Ser Pro Ser Trp Asn Val Leu Tyr Cys Gln Ala Arg Pro  
5765 5770 5775

Leu Thr Leu Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu  
5780 5785 5790

Leu Pro Thr Ala Gly Asp Phe Ser Gly Ala Asn Thr His Ala Met  
5795 5800 5805

His Pro Leu Leu Asp Thr Ala Thr Glu Leu Ala Glu Asn Arg Gly  
5810 5815 5820

Trp Val Phe Thr Gly Arg Ile Ser Pro Arg Thr Gln Pro Trp Leu  
5825 5830 5835

Asn Glu His Ala Val Glu Ser Ala Val Leu Phe Pro Gly Thr Gly  
5840 5845 5850

Phe Val Glu Leu Ala Leu His Val Ala Asp Arg Ala Gly Tyr Ser  
5855 5860 5865

Ser Val Asn Glu Leu Ile Val His Thr Pro Leu Leu Leu Ala Gly  
5870 5875 5880

His Asp Thr Ala Asp Leu Gln Ile Thr Val Thr Asp Thr Asp Asp  
5885 5890 5895

Met Gly Arg Gln Ser Leu Asn Ile His Ser Arg Pro His Ile Gly  
5900 5905 5910

His Asp Asn Thr Thr Thr Gly Asp Glu Gln Pro Glu Trp Val Leu  
5915 5920 5925

His Ala Ser Ala Val Leu Thr Ala Gln Thr Thr Asp His Asn His

5930	5935	5940
Leu Pro Leu Thr Pro Val Pro Trp Pro Pro Pro Gly Thr Ala Ala 5945 5950 5955		
Ile Glu Val Asp Asp Phe Tyr Asp Asp Leu Ala Ala Gln Gly Tyr 5960 5965 5970		
Asn Tyr Gly Pro Thr Phe Gln Gly Val Gln Arg Ile Trp Arg Asp 5975 5980 5985		
His Ala Thr Pro Asp Val Ile Tyr Ala Glu Val Glu Leu Pro Glu 5990 5995 6000		
Asp Thr Asp Ile Asp Gly Tyr Gly Ile His Pro Ala Leu Phe Asp 6005 6010 6015		
Ala Ala Leu His Pro Leu Leu Ala Leu Thr Gln Pro Pro Thr Asn 6020 6025 6030		
Asp Thr Asp Asp Thr Asn Thr Ala Asp Thr Gly Asp Gln Val Arg 6035 6040 6045		
Leu Pro Tyr Ala Phe Thr Gly Ile Ser Leu His Ala Thr His Ala 6050 6055 6060		
Thr Arg Leu Arg Val Arg Leu Thr Arg Thr Gly Ala Asp Ala Ile 6065 6070 6075		
Thr Val His Thr Ser Asp Thr Thr Gly Ala Pro Val Ala Ile Ile 6080 6085 6090		
Asp Ser Leu Ile Thr Arg Pro Leu Thr Thr Ala Thr Gly Ser Ala 6095 6100 6105		
Pro Ala Thr Thr Ala Ala Gly Leu Leu His Leu Ser Trp Pro Pro 6110 6115 6120		
His Pro Asp Thr Thr Thr Asp Thr Asp Thr Asp Thr Asp Ala Leu 6125 6130 6135		
Arg Tyr Gln Val Ile Ala Glu Pro Thr Gln Gln Leu Pro Arg Tyr 6140 6145 6150		
Leu His Asp Leu His Thr Ser Thr Asp Leu His Thr Ser Thr Thr 6155 6160 6165		

Glu	Ala	Asp	Val	Val	Val	Trp	Pro	Val	Pro	Val	Pro	Ser	Asn	Glu
6170						6175					6180			
Glu	Leu	Gln	Ala	His	Gln	Ala	Ser	Asp	Thr	Ala	Val	Ser	Ser	Arg
6185						6190					6195			
Ile	His	Thr	Leu	Thr	Arg	Gln	Thr	Leu	Thr	Val	Val	Gln	Asp	Trp
6200						6205					6210			
Leu	Thr	His	Pro	Asp	Thr	Thr	Gly	Thr	Arg	Leu	Val	Ile	Val	Thr
6215						6220					6225			
Arg	His	Gly	Val	Ser	Thr	Ser	Ala	His	Asp	Pro	Val	Pro	Asp	Leu
6230						6235					6240			
Ala	His	Ala	Ala	Val	Trp	Gly	Leu	Ile	Arg	Ser	Ala	Gln	Asn	Glu
6245						6250					6255			
His	Pro	Gly	Arg	Phe	Thr	Leu	Leu	Asp	Thr	Asp	Asp	Asn	Thr	Asn
6260						6265					6270			
Ser	Asp	Thr	Leu	Thr	Thr	Ala	Leu	Thr	Leu	Pro	Thr	Arg	Glu	Asn
6275						6280					6285			
Gln	Leu	Ala	Ile	Arg	Arg	Asp	Thr	Ile	His	Ile	Pro	Arg	Leu	Thr
6290						6295					6300			
Arg	His	Ser	Ser	Asp	Gly	Ala	Leu	Thr	Ala	Pro	Val	Val	Val	Asp
6305						6310					6315			
Pro	Glu	Gly	Thr	Val	Leu	Ile	Thr	Gly	Gly	Thr	Gly	Thr	Leu	Gly
6320						6325					6330			
Ala	Leu	Phe	Ala	Glu	His	Leu	Val	Ser	Ala	His	Gly	Val	Arg	His
6335						6340					6345			
Leu	Leu	Leu	Thr	Ser	Arg	Arg	Gly	Pro	Gln	Ala	His	Gly	Ala	Thr
6350						6355					6360			
Asp	Leu	Gln	Gln	Arg	Leu	Thr	Asp	Leu	Gly	Ala	His	Val	Thr	Ile
6365						6370					6375			
Thr	Ala	Cys	Asp	Ile	Ser	Asp	Pro	Glu	Ala	Leu	Ala	Ala	Leu	Val
6380						6385					6390			

Asn	Ser	Val	Pro	Thr	Gln	His	Arg	Leu	Thr	Ala	Val	Val	His	Thr
6395						6400					6405			
Ala	Ala	Val	Leu	Ala	Asp	Thr	Pro	Val	Thr	Glu	Leu	Thr	Gly	Asp
6410						6415					6420			
Gln	Leu	Asp	Gln	Val	Leu	Ala	Pro	Lys	Ile	Asp	Ala	Ala	Trp	Gln
6425						6430					6435			
Leu	His	Gln	Leu	Thr	Tyr	Glu	His	Asn	Leu	Ser	Ala	Phe	Ile	Met
6440						6445					6450			
Phe	Ser	Ser	Met	Ala	Gly	Met	Ile	Gly	Ser	Pro	Gly	Gln	Gly	Asn
6455						6460					6465			
Tyr	Ala	Ala	Ala	Asn	Thr	Ala	Leu	Asp	Ala	Leu	Ala	Asp	Tyr	Arg
6470						6475					6480			
His	Arg	Leu	Gly	Leu	Pro	Ala	Thr	Ser	Leu	Ala	Trp	Gly	Tyr	Trp
6485						6490					6495			
Gln	Thr	His	Thr	Gly	Leu	Thr	Ala	His	Leu	Thr	Asp	Val	Asp	Leu
6500						6505					6510			
Ala	Arg	Met	Thr	Arg	Leu	Gly	Leu	Met	Pro	Ile	Ala	Thr	Ser	His
6515						6520					6525			
Gly	Leu	Ala	Leu	Phe	Asp	Ala	Ala	Leu	Ala	Thr	Gly	Gln	Pro	Val
6530						6535					6540			
Ser	Ile	Pro	Ala	Pro	Ile	Asn	Thr	His	Thr	Leu	Ala	Arg	His	Ala
6545						6550					6555			
Arg	Asp	Asn	Thr	Leu	Ala	Pro	Ile	Leu	Ser	Ala	Leu	Ile	Thr	Thr
6560						6565					6570			
Pro	Arg	Arg	Arg	Ala	Ala	Ser	Ala	Ala	Thr	Asp	Leu	Ala	Ala	Arg
6575						6580					6585			
Leu	Asn	Gly	Leu	Ser	Pro	Gln	Gln	Gln	Gln	Gln	Thr	Leu	Ala	Thr
6590						6595					6600			
Leu	Val	Ala	Ala	Ala	Thr	Ala	Thr	Val	Leu	Gly	His	His	Thr	Pro
6605						6610					6615			

Glu Ser 6620	Ile Ser Pro Ala Thr 6625	Ala Phe Lys Asp Leu 6630	Gly Ile Asp
Ser Leu 6635	Thr Ala Leu Glu Leu 6640	Arg Asn Thr Leu Thr 6645	His Asn Thr
Gly Leu 6650	Asp Leu Pro Pro Thr 6655	Leu Ile Phe Asp His 6660	Pro Thr Pro
His Ala 6665	Val Ala Glu His Leu 6670	Leu Glu Gln Ile Pro 6675	Gly Ile Gly
Ala Leu 6680	Val Pro Ala Pro Val 6685	Val Ile Ala Ala Gly 6690	Arg Thr Glu
Glu Pro 6695	Val Ala Val Val Gly 6700	Met Ala Cys Arg Phe 6705	Pro Gly Gly
Val Ala 6710	Ser Ala Asp Gln Leu 6715	Trp Asp Leu Val Ile 6720	Ala Gly Arg
Asp Val 6725	Val Gly Asn Phe Pro 6730	Ala Asp Arg Gly Trp 6735	Asp Val Glu
Gly Leu 6740	Phe Asp Pro Asp Pro 6745	Asp Ala Val Gly Lys 6750	Thr Tyr Thr
Arg Tyr 6755	Gly Ala Phe Leu Asp 6760	Asp Ala Ala Gly Phe 6765	Asp Ala Gly
Phe Phe 6770	Gly Ile Ser Pro Arg 6775	Glu Ala Arg Ala Met 6780	Asp Pro Gln
Gln Arg 6785	Leu Leu Leu Glu Val 6790	Cys Trp Glu Ala Leu 6795	Glu Thr Ala
Gly Ile 6800	Pro Ala His Thr Leu 6805	Ala Gly Thr Ser Thr 6810	Gly Val Phe
Ala Gly 6815	Ala Trp Ala Gln Ser 6820	Tyr Gly Ala Thr Asn 6825	Ser Asp Asp
Ala Glu 6830	Gly Tyr Ala Met Thr 6835	Gly Gly Ser Thr Ser 6840	Val Met Ser
Gly Arg	Ile Ala Tyr Thr Leu	Gly Leu Glu Gly Pro	Ala Ile Thr

6845		6850		6855	
Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Ile His Leu Ala					
6860		6865		6870	
Cys Gln Ser Leu Arg Asn Asn Glu Ser Gln Leu Ala Leu Ala Gly					
6875		6880		6885	
Gly Val Thr Val Met Ser Thr Pro Ala Val Phe Thr Glu Phe Ser					
6890		6895		6900	
Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Cys Lys Ala Phe Ala					
6905		6910		6915	
Ala Thr Ala Asp Gly Thr Gly Phe Gly Glu Gly Ala Ala Val Leu					
6920		6925		6930	
Val Leu Glu Arg Leu Ser Glu Ala Arg Arg Asn Asn His Pro Val					
6935		6940		6945	
Leu Ala Ile Val Ala Gly Ser Ala Ile Asn Gln Asp Gly Ala Ser					
6950		6955		6960	
Asn Gly Leu Thr Ala Pro His Gly Pro Ser Gln Gln Arg Val Ile					
6965		6970		6975	
Asn Gln Ala Leu Ala Asn Ala Gly Leu Thr His Asp Gln Val Asp					
6980		6985		6990	
Ala Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile					
6995		7000		7005	
Glu Ala Ser Ala Leu His Ala Thr Tyr Gly His His His Thr Pro					
7010		7015		7020	
Asp Gln Pro Leu Trp Leu Gly Ser Ile Lys Ser Asn Ile Gly His					
7025		7030		7035	
Thr Gln Ala Ala Ala Gly Ala Ala Gly Val Val Lys Met Ile Gln					
7040		7045		7050	
Ala Ile Thr His Ala Thr Leu Pro Ala Thr Leu His Val Asp Gln					
7055		7060		7065	
Pro Ser Pro His Ile Asp Trp Ser Ser Gly Thr Val Arg Leu Leu					
7070		7075		7080	

Thr 7085	Glu	Pro	Ile	Gln	Trp	Pro 7090	Asn	Thr	Asp	His	Pro 7095	Arg	Thr	Ala
Ala 7100	Val	Ser	Ser	Phe	Gly	Ile 7105	Ser	Gly	Thr	Asn	Ala 7110	His	Leu	Ile
Leu 7115	Gln	Gln	Pro	Pro	Thr	Pro 7120	Asp	Thr	Thr	Gln	Thr 7125	Pro	Asn	Pro
Thr 7130	Thr	Gly	Ser	Asp	Pro	Ala 7135	Val	Gly	Ser	Asp	Pro 7140	Ala	Val	Gly
Val 7145	Leu	Val	Trp	Pro	Leu	Ser 7150	Ala	Arg	Ser	Ala	Pro 7155	Gly	Leu	Ser
Ala 7160	Gln	Ala	Ala	Arg	Leu	Tyr 7165	Gln	His	Leu	Ser	Ala 7170	His	Pro	Asp
Leu 7175	Asp	Pro	Ile	Asp	Val	Ala 7180	His	Ser	Leu	Ala	Thr 7185	Thr	Arg	Ser
His 7190	His	Pro	His	Arg	Ala	Thr 7195	Ile	Thr	Thr	Ser	Ile 7200	Glu	His	His
Ser 7205	Glu	Asn	Asn	His	Asp	Thr 7210	Thr	Asp	Ala	Leu	Ala 7215	Ala	Leu	His
Ala 7220	Leu	Ala	Asn	Asn	Gly	Thr 7225	His	Pro	Leu	Leu	Ser 7230	Arg	Gly	Leu
Leu 7235	Thr	Pro	Gln	Gly	Pro	Gly 7240	Lys	Thr	Val	Phe	Val 7245	Phe	Pro	Gly
Gln 7250	Gly	Ser	Gln	Tyr	Pro	Gly 7255	Met	Gly	Ala	Asp	Leu 7260	Tyr	Arg	Gln
Phe 7265	Pro	Val	Phe	Ala	His	Ala 7270	Leu	Asp	Glu	Val	Ala 7275	Ala	Ala	Leu
Asn 7280	Pro	His	Leu	Asp	Val	Ala 7285	Leu	Leu	Glu	Val	Met 7290	Phe	Ser	Gln
Gln 7295	Asp	Thr	Ala	Met	Ala	Gln 7300	Leu	Leu	Asp	Gln	Thr 7305	Phe	Tyr	Ala



Gln Pro Ala Leu Phe Ala Leu Gly Thr Ala Leu His Arg Leu Phe  
7310 7315 7320

Thr His Ala Gly Ile His Pro Asp Tyr Leu Leu Gly His Ser Ile  
7325 7330 7335

Gly Glu Leu Thr Ala Ala Tyr Ala Ala Gly Val Leu Ser Leu Gln  
7340 7345 7350

Asp Ala Ala Thr Leu Val Thr Ser Arg Gly Arg Leu Met Gln Ser  
7355 7360 7365

Cys Thr Pro Gly Gly Thr Met Leu Ala Leu Gln Ala Ser Glu Ala  
7370 7375 7380

Glu Val Gln Pro Leu Leu Glu Gly Leu Asp His Ala Val Ser Ile  
7385 7390 7395

Ala Ala Ile Asn Gly Ala Thr Ser Ile Val Leu Ser Gly Asp His  
7400 7405 7410

Asp Ser Leu Glu Gln Ile Gly Glu His Phe Ile Thr Gln Asp Arg  
7415 7420 7425

Arg Thr Thr Arg Leu Gln Val Ser His Ala Phe His Ser Pro His  
7430 7435 7440

Met Asp Pro Ile Leu Glu Gln Phe Arg Gln Ile Ala Ala Gln Leu  
7445 7450 7455

Thr Phe Ser Ala Pro Thr Leu Pro Ile Leu Ser Asn Leu Thr Gly  
7460 7465 7470

Gln Ile Ala Arg His Asp Gln Leu Ala Ser Pro Asp Tyr Trp Thr  
7475 7480 7485

Gln Gln Leu Arg Asn Thr Val Arg Phe His Asp Thr Val Ala Ala  
7490 7495 7500

Leu Leu Gly Ala Gly Glu Gln Val Phe Leu Glu Leu Ser Pro His  
7505 7510 7515

Pro Val Leu Thr Gln Ala Ile Thr Asp Thr Val Glu Gln Ala Gly  
7520 7525 7530

Gly Gly Gly Ala Ala Val Pro Ala Leu Arg Lys Asp Arg Pro Asp  
 7535 7540 7545

Ala Val Ala Phe Ala Ala Ala Leu Gly Gln Leu His Cys His Gly  
 7550 7555 7560

Ile Ser Pro Ser Trp Asn Val Leu Tyr Cys Gln Ala Arg Pro Leu  
 7565 7570 7575

Thr Leu Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Leu  
 7580 7585 7590

Pro Thr Ala Gly Asp Phe Ser Gly Ala Asn Thr His Ala Met His  
 7595 7600 7605

Pro Leu Leu Asp Thr Ala Thr Glu Leu Ala Glu Asn Arg Gly Trp  
 7610 7615 7620

Val Phe Thr Gly Arg Ile Ser Pro Arg Thr Gln Pro Trp Leu Asn  
 7625 7630 7635

Glu His Ala Val Glu Ser Ala Val Leu Phe Pro Gly Thr Gly Phe  
 7640 7645 7650

Val Glu Leu Ala Leu His Val Ala Asp Arg Ala Gly Tyr Ser Ser  
 7655 7660 7665

Val Asn Glu Leu Ile Val His Thr Pro Leu Leu Leu Ala Gly His  
 7670 7675 7680

Asp Thr Ala Asp Leu Gln Ile Thr Val Thr Asp Thr Asp Asp Met  
 7685 7690 7695

Gly Arg Gln Ser Leu Asn Ile His Ser Arg Pro His Ile Gly His  
 7700 7705 7710

Asp Asn Thr Thr Thr Gly Asp Glu Gln Pro Glu Trp Val Leu His  
 7715 7720 7725

Ala Ser Ala Val Leu Thr Ala Gln Thr Thr Asp His Asn His Leu  
 7730 7735 7740

Pro Leu Thr Pro Val Pro Trp Pro Pro Pro Gly Thr Ala Ala Ile  
 7745 7750 7755

Glu Val Asp Asp Phe Tyr Asp Asp Leu Ala Ala Gln Gly Tyr Asn  
 7760 7765 7770  
 Tyr Gly Pro Thr Phe Gln Gly Val Gln Arg Ile Trp Arg Asp His  
 7775 7780 7785  
 Ala Thr Pro Asp Val Ile Tyr Ala Glu Val Glu Leu Pro Glu Asp  
 7790 7795 7800  
 Thr Asp Ile Asp Gly Tyr Gly Ile His Pro Ala Leu Phe Asp Ala  
 7805 7810 7815  
 Ala Leu His Pro Leu Leu Ala Leu Thr Gln Pro Pro Thr Asn Asp  
 7820 7825 7830  
 Thr Asp Asp Thr Asn Thr Ala Asp Thr Gly Asp Gln Val Arg Leu  
 7835 7840 7845  
 Pro Tyr Ala Phe Thr Gly Ile Ser Leu His Ala Thr His Ala Thr  
 7850 7855 7860  
 Arg Leu Arg Val Arg Leu Thr Arg Thr Gly Ala Asp Ala Ile Thr  
 7865 7870 7875  
 Val His Thr Ser Asp Thr Thr Gly Ala Pro Val Ala Ile Ile Asp  
 7880 7885 7890  
 Ser Leu Ile Thr Arg Pro Leu Thr Thr Ala Thr Gly Ser Ala Pro  
 7895 7900 7905  
 Ala Thr Thr Ala Ala Gly Leu Leu His Leu Ser Trp Pro Pro His  
 7910 7915 7920  
 Pro Asp Thr Thr Thr Asp Thr Asp Thr Asp Thr Asp Ala Leu Arg  
 7925 7930 7935  
 Tyr Gln Val Ile Ala Glu Pro Thr Gln Gln Leu Pro Arg Tyr Leu  
 7940 7945 7950  
 His Asp Leu His Thr Ser Thr Asp Leu His Thr Ser Thr Thr Glu  
 7955 7960 7965  
 Ala Asp Val Val Val Trp Pro Val Pro Val Pro Ser Asn Glu Glu  
 7970 7975 7980

Leu Gln Ala His Gln Ala Ser Asp Thr Ala Val Ser Ser Arg Ile 7985 7990 7995
His Thr Leu Thr Arg Gln Thr Leu Thr Val Val Gln Asp Trp Leu 8000 8005 8010
Thr His Pro Asp Thr Thr Gly Thr Arg Leu Val Ile Val Thr Arg 8015 8020 8025
His Gly Val Ser Thr Ser Ala His Asp Pro Val Pro Asp Leu Ala 8030 8035 8040
His Ala Ala Val Trp Gly Leu Ile Arg Ser Ala Gln Asn Glu His 8045 8050 8055
Pro Gly Arg Phe Thr Leu Leu Asp Thr Asp Asp Asn Thr Asn Ser 8060 8065 8070
Asp Thr Leu Thr Thr Ala Leu Thr Leu Pro Thr Arg Glu Asn Gln 8075 8080 8085
Leu Ala Ile Arg Arg Asp Thr Ile His Ile Pro Arg Leu Thr Arg 8090 8095 8100
His Ser Ser Asp Gly Ala Leu Thr Ala Pro Val Val Val Asp Pro 8105 8110 8115
Glu Gly Thr Val Leu Ile Thr Gly Gly Thr Gly Thr Leu Gly Ala 8120 8125 8130
Leu Phe Ala Glu His Leu Val Ser Ala His Gly Val Arg His Leu 8135 8140 8145
Leu Leu Thr Ser Arg Arg Gly Pro Gln Ala His Gly Ala Thr Asp 8150 8155 8160
Leu Gln Gln Arg Leu Thr Asp Leu Gly Ala His Val Thr Ile Thr 8165 8170 8175
Ala Cys Asp Ile Ser Asp Pro Glu Ala Leu Ala Ala Leu Val Asn 8180 8185 8190
Ser Val Pro Thr Gln His Arg Leu Thr Ala Val Val His Thr Ala 8195 8200 8205

Ala	Val	Leu	Ala	Asp	Thr	Pro	Val	Thr	Glu	Leu	Thr	Gly	Asp	Gln
8210						8215					8220			
Leu	Asp	Gln	Val	Leu	Ala	Pro	Lys	Ile	Asp	Ala	Ala	Trp	Gln	Leu
8225						8230					8235			
His	Gln	Leu	Thr	Tyr	Glu	His	Asn	Leu	Ser	Ala	Phe	Ile	Met	Phe
8240						8245					8250			
Ser	Ser	Met	Ala	Gly	Met	Ile	Gly	Ser	Pro	Gly	Gln	Gly	Asn	Tyr
8255						8260					8265			
Ala	Ala	Ala	Asn	Thr	Ala	Leu	Asp	Ala	Leu	Ala	Asp	Tyr	Arg	His
8270						8275					8280			
Arg	Leu	Gly	Leu	Pro	Ala	Thr	Ser	Leu	Ala	Trp	Gly	Tyr	Trp	Gln
8285						8290					8295			
Thr	His	Thr	Gly	Leu	Thr	Ala	His	Leu	Thr	Asp	Val	Asp	Leu	Ala
8300						8305					8310			
Arg	Met	Thr	Arg	Leu	Gly	Leu	Met	Pro	Ile	Ala	Thr	Ser	His	Gly
8315						8320					8325			
Leu	Ala	Leu	Phe	Asp	Ala	Ala	Leu	Ala	Thr	Gly	Gln	Pro	Val	Ser
8330						8335					8340			
Ile	Pro	Ala	Pro	Ile	Asn	Thr	His	Thr	Leu	Ala	Arg	His	Ala	Arg
8345						8350					8355			
Asp	Asn	Thr	Leu	Ala	Pro	Ile	Leu	Ser	Ala	Leu	Ile	Thr	Thr	Pro
8360						8365					8370			
Arg	Arg	Arg	Ala	Ala	Ser	Ala	Ala	Thr	Asp	Leu	Ala	Ala	Arg	Leu
8375						8380					8385			
Asn	Gly	Leu	Ser	Pro	Gln	Gln	Gln	Gln	Gln	Thr	Leu	Ala	Thr	Leu
8390						8395					8400			
Val	Ala	Ala	Ala	Thr	Ala	Thr	Val	Leu	Gly	His	His	Thr	Pro	Glu
8405						8410					8415			
Ser	Ile	Ser	Pro	Ala	Thr	Ala	Phe	Lys	Asp	Leu	Gly	Ile	Asp	Ser
8420						8425					8430			
Leu	Thr	Ala	Leu	Glu	Leu	Arg	Asn	Thr	Leu	Thr	His	Asn	Thr	Gly

8435		8440		8445
Leu Asp 8450	Leu Pro	Pro Thr	Leu Ile Phe Asp His 8455	Pro Thr Pro His 8460
Ala Val 8465	Ala Glu	His Leu	Leu Glu Gln Ile Pro 8470	Gly Ile Gly Ala 8475
Leu Val 8480	Pro Ala	Pro Val	Val Ile Ala Ala Gly 8485	Arg Thr Glu Glu 8490
Pro Val 8495	Ala Val	Val Gly	Met Ala Cys Arg Phe 8500	Pro Gly Gly Val 8505
Ala Ser 8510	Ala Asp	Gln Leu	Trp Asp Leu Val Ile 8515	Ala Gly Arg Asp 8520
Val Val 8525	Gly Asn	Phe Pro	Ala Asp Arg Gly Trp 8530	Asp Val Glu Gly 8535
Leu Phe 8540	Asp Pro	Asp Pro	Asp Ala Val Gly Lys 8545	Thr Tyr Thr Arg 8550
Tyr Gly 8555	Ala Phe	Leu Asp	Asp Ala Ala Gly Phe 8560	Asp Ala Gly Phe 8565
Phe Gly 8570	Ile Ser	Pro Arg	Glu Ala Arg Ala Met 8575	Asp Pro Gln Gln 8580
Arg Leu 8585	Leu Leu	Glu Val	Cys Trp Glu Ala Leu 8590	Glu Thr Ala Gly 8595
Ile Pro 8600	Ala His	Thr Leu	Ala Gly Thr Ser Thr 8605	Gly Val Phe Ala 8610
Gly Ala 8615	Trp Ala	Gln Ser	Tyr Gly Ala Thr Asn 8620	Ser Asp Asp Ala 8625
Glu Gly 8630	Tyr Ala	Met Thr	Gly Gly Ala Thr Ser 8635	Val Met Ser Gly 8640
Arg Ile 8645	Ala Tyr	Thr Leu	Gly Leu Glu Gly Pro 8650	Ala Ile Thr Val 8655
Asp Thr 8660	Ala Cys	Ser Ser	Ser Leu Val Ala Ile 8665	His Leu Ala Cys 8670

Gln	Ser	Leu	Arg	Asn	Asn	Glu	Ser	Gln	Leu	Ala	Leu	Ala	Gly	Gly
8675						8680					8685			
Val	Thr	Val	Met	Ser	Thr	Pro	Ala	Val	Phe	Thr	Glu	Phe	Ser	Arg
8690						8695					8700			
Gln	Arg	Gly	Leu	Ala	Pro	Asp	Gly	Arg	Cys	Lys	Ala	Phe	Ala	Ala
8705						8710					8715			
Thr	Ala	Asp	Gly	Thr	Gly	Phe	Gly	Glu	Gly	Ala	Ala	Val	Leu	Val
8720						8725					8730			
Leu	Glu	Arg	Leu	Ser	Glu	Ala	Arg	Arg	Asn	Asn	His	Pro	Val	Leu
8735						8740					8745			
Ala	Ile	Val	Ala	Gly	Ser	Ala	Ile	Asn	Gln	Asp	Gly	Ala	Ser	Asn
8750						8755					8760			
Gly	Leu	Thr	Ala	Pro	His	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	Asn
8765						8770					8775			
Gln	Ala	Leu	Ala	Asn	Ala	Gly	Leu	Thr	His	Asp	Gln	Val	Asp	Ala
8780						8785					8790			
Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu
8795						8800					8805			
Ala	Ser	Ala	Leu	His	Ala	Thr	Tyr	Gly	His	His	His	Thr	Pro	Asp
8810						8815					8820			
Gln	Pro	Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile	Gly	His	Thr
8825						8830					8835			
Gln	Ala	Ala	Ala	Gly	Ala	Ala	Gly	Val	Val	Lys	Met	Ile	Gln	Ala
8840						8845					8850			
Ile	Thr	His	Ala	Thr	Leu	Pro	Ala	Thr	Leu	His	Val	Asp	Gln	Pro
8855						8860					8865			
Ser	Pro	His	Ile	Asp	Trp	Ser	Ser	Gly	Thr	Val	Arg	Leu	Leu	Thr
8870						8875					8880			
Glu	Pro	Ile	Gln	Trp	Pro	Asn	Thr	Asp	His	Pro	Arg	Thr	Ala	Ala
8885						8890					8895			

Val	Ser	Ser	Phe	Gly	Ile	Ser	Gly	Thr	Asn	Ala	His	Leu	Ile	Leu
8900						8905					8910			
Gln	Gln	Pro	Pro	Thr	Pro	Asp	Thr	Thr	Gln	Thr	Pro	Asn	Thr	Thr
8915						8920					8925			
Thr	Gly	Ser	Asp	Pro	Ala	Val	Gly	Ser	Asp	Pro	Ala	Val	Gly	Val
8930						8935					8940			
Leu	Val	Trp	Pro	Leu	Ser	Ala	Arg	Ser	Ala	Pro	Gly	Leu	Ser	Ala
8945						8950					8955			
Gln	Ala	Ala	Arg	Leu	Tyr	Gln	His	Leu	Ser	Ala	His	Pro	Asp	Leu
8960						8965					8970			
Asp	Pro	Ile	Asp	Val	Ala	His	Ser	Leu	Ala	Thr	Thr	Arg	Ser	His
8975						8980					8985			
His	Pro	His	Arg	Ala	Thr	Ile	Thr	Thr	Ser	Ile	Glu	His	His	Ser
8990						8995					9000			
Glu	Asn	Asn	His	Asp	Thr	Thr	Asp	Ala	Leu	Ala	Ala	Leu	His	Ala
9005						9010					9015			
Leu	Ala	Asn	Asn	Gly	Thr	His	Pro	Leu	Leu	Ser	Arg	Gly	Leu	Leu
9020						9025					9030			
Thr	Pro	Gln	Gly	Pro	Gly	Lys	Thr	Val	Phe	Val	Phe	Pro	Gly	Gln
9035						9040					9045			
Gly	Ser	Gln	Tyr	Pro	Gly	Met	Gly	Ala	Asp	Leu	Tyr	Arg	Gln	Phe
9050						9055					9060			
Pro	Val	Phe	Ala	His	Ala	Leu	Asp	Ala	Cys	Asp	Ala	Ala	Leu	Gln
9065						9070					9075			
Pro	Phe	Thr	Gly	Trp	Ser	Val	Leu	Ala	Val	Leu	His	Asp	Glu	Pro
9080						9085					9090			
Glu	Ala	Pro	Ser	Leu	Glu	Arg	Val	Asp	Val	Val	Gln	Pro	Val	Leu
9095						9100					9105			
Phe	Ser	Val	Met	Val	Ser	Leu	Ala	Ala	Leu	Trp	Arg	Trp	Ala	Gly
9110						9115					9120			



Ile Thr Pro Asp Ala Val	Ile Gly His Ser Gln Gly	Glu Ile Ala
9125	9130	9135
Ala Ala His Val Ala Gly	Ala Leu Thr Leu Pro Glu	Ala Ala Ala
9140	9145	9150
Val Val Ala Leu Arg Ser	Arg Val Leu Thr Asp Leu	Ala Gly Ala
9155	9160	9165
Gly Ala Met Ala Ser Val	Leu Ser Pro Glu Glu Pro	Leu Thr Gln
9170	9175	9180
Leu Leu Ala Arg Trp Asp	Gly Lys Ile Thr Val Ala	Ala Val Asn
9185	9190	9195
Gly Pro Ala Ser Ala Val	Val Ser Gly Asp Thr Thr	Ala Ile Thr
9200	9205	9210
Glu Leu Leu Ile Thr Cys	Glu His Glu Asn Ile Asp	Ala Arg Ala
9215	9220	9225
Ile Pro Val Asp Tyr Pro	Ser His Ser Pro Tyr Met	Glu His Ile
9230	9235	9240
Arg His Gln Phe Leu Asp	Glu Leu Pro Glu Leu Thr	Pro Arg Pro
9245	9250	9255
Ser Thr Ile Ala Met Tyr	Ser Thr Val Asp Gly Glu	Pro His Asp
9260	9265	9270
Thr Ala Tyr Asp Thr Thr	Thr Met Thr Ala Asp Tyr	Trp Tyr Arg
9275	9280	9285
Asn Ile Arg Asn Thr Val	Arg Phe His Asp Thr Val	Ala Ala Leu
9290	9295	9300
Leu Gly Ala Gly Glu Gln	Val Phe Leu Glu Leu Ser	Pro His Pro
9305	9310	9315
Val Leu Thr Gln Ala Ile	Thr Asp Thr Val Glu Gln	Ala Gly Gly
9320	9325	9330
Gly Gly Ala Ala Val Pro	Ala Leu Arg Lys Asp Arg	Pro Asp Ala
9335	9340	9345

Val	Ala	Phe	Ala	Ala	Ala	Leu	Gly	Gln	Leu	His	Cys	His	Gly	Ile
9350						9355					9360			
Ser	Pro	Ser	Trp	Asn	Val	Leu	Tyr	Cys	Gln	Ala	Arg	Pro	Leu	Thr
9365						9370					9375			
Leu	Pro	Thr	Tyr	Ala	Phe	Gln	His	Gln	Arg	Tyr	Trp	Leu	Leu	Pro
9380						9385					9390			
Thr	Ala	Gly	Asp	Phe	Ser	Gly	Ala	Asn	Thr	His	Ala	Met	His	Pro
9395						9400					9405			
Leu	Leu	Asp	Thr	Ala	Thr	Glu	Leu	Ala	Glu	Asn	Arg	Gly	Trp	Val
9410						9415					9420			
Phe	Thr	Gly	Arg	Ile	Ser	Pro	Arg	Thr	Gln	Pro	Trp	Leu	Asn	Glu
9425						9430					9435			
His	Ala	Val	Glu	Ser	Ala	Val	Leu	Phe	Pro	Gly	Thr	Gly	Phe	Val
9440						9445					9450			
Glu	Leu	Ala	Leu	His	Val	Ala	Asp	Arg	Ala	Gly	Tyr	Ser	Ser	Val
9455						9460					9465			
Asn	Glu	Leu	Ile	Val	His	Thr	Pro	Leu	Leu	Leu	Ala	Gly	His	Asp
9470						9475					9480			
Thr	Ala	Asp	Leu	Gln	Ile	Thr	Val	Thr	Asp	Thr	Asp	Asp	Met	Gly
9485						9490					9495			
Arg	Gln	Ser	Leu	Asn	Ile	His	Ser	His	Pro	His	Ile	Gly	His	Asp
9500						9505					9510			
Asn	Thr	Thr	Thr	Gly	Asp	Glu	Gln	Pro	Glu	Trp	Val	Leu	His	Ala
9515						9520					9525			
Ser	Ala	Val	Leu	Thr	Ala	Gln	Thr	Thr	Asp	His	Asn	His	Leu	Pro
9530						9535					9540			
Leu	Thr	Pro	Val	Pro	Trp	Pro	Pro	Pro	Gly	Thr	Ala	Ala	Ile	Glu
9545						9550					9555			
Val	Asp	Asp	Phe	Tyr	Asp	Asp	Leu	Ala	Ala	Gln	Gly	Tyr	Asn	Tyr
9560						9565					9570			

Gly	Pro	Thr	Phe	Gln	Gly	Val	Gln	Arg	Ile	Trp	Arg	Asp	His	Ala
9575						9580					9585			
Thr	Pro	Asp	Val	Ile	Tyr	Ala	Glu	Val	Glu	Leu	Pro	Glu	Asp	Thr
9590						9595					9600			
Asp	Ile	Asp	Gly	Tyr	Gly	Ile	His	Pro	Ala	Leu	Phe	Asp	Ala	Ala
9605						9610					9615			
Leu	His	Pro	Leu	Leu	Ala	Leu	Thr	Gln	Pro	Pro	Thr	Asn	Asp	Thr
9620						9625					9630			
Asp	Asp	Thr	Asn	Thr	Ala	Asp	Thr	Gly	Asp	Gln	Val	Arg	Leu	Pro
9635						9640					9645			
Tyr	Ala	Phe	Thr	Gly	Ile	Ser	Leu	His	Ala	Thr	His	Ala	Thr	Arg
9650						9655					9660			
Leu	Arg	Val	Arg	Leu	Thr	Arg	Thr	Gly	Ala	Asp	Ala	Ile	Thr	Val
9665						9670					9675			
His	Thr	Ser	Asp	Thr	Thr	Gly	Ala	Pro	Val	Ala	Ile	Ile	Asp	Ser
9680						9685					9690			
Leu	Ile	Thr	Arg	Pro	Leu	Thr	Thr	Ala	Thr	Gly	Ser	Ala	Pro	Ala
9695						9700					9705			
Thr	Thr	Ala	Ala	Gly	Leu	Leu	His	Leu	Ser	Trp	Pro	Pro	His	Pro
9710						9715					9720			
Asp	Thr	Thr	Thr	Asp	Thr	Asp	Thr	Asp	Thr	Asp	Ala	Leu	Arg	Tyr
9725						9730					9735			
Arg	Val	Ile	Ala	Glu	Pro	Thr	Gln	Gln	Leu	Pro	Arg	Tyr	Leu	His
9740						9745					9750			
Asp	Leu	His	Thr	Ser	Thr	Asp	Leu	His	Thr	Ser	Thr	Thr	Glu	Ala
9755						9760					9765			
Asp	Val	Val	Val	Trp	Pro	Val	Pro	Val	Pro	Ser	Asn	Glu	Glu	Leu
9770						9775					9780			
Gln	Ala	His	Gln	Ala	Ser	Asp	Thr	Ala	Val	Ser	Ser	Arg	Ile	His
9785						9790					9795			

Thr Leu Thr Arg Gln Thr Leu Thr Val Val Gln Asp Trp Leu Thr  
 9800 9805 9810  
 His Pro Asp Thr Thr Gly Thr Arg Leu Val Ile Val Thr Arg His  
 9815 9820 9825  
 Gly Val Ser Thr Ser Ala His Asp Pro Val Pro Asp Leu Ala His  
 9830 9835 9840  
 Ala Ala Val Trp Gly Leu Ile Arg Ser Ala Gln Asn Glu His Pro  
 9845 9850 9855  
 Gly Arg Phe Thr Leu Leu Asp Thr Asp Asp Asn Thr Asn Ser Asp  
 9860 9865 9870  
 Thr Leu Thr Thr Ala Leu Thr Leu Pro Thr Arg Glu Asn Gln Leu  
 9875 9880 9885  
 Ala Ile Arg Arg Asp Thr Ile His Ile Pro Arg Leu Thr Arg His  
 9890 9895 9900  
 Ser Ser Asp Gly Ala Leu Thr Ala Pro Val Val Val Asp Pro Glu  
 9905 9910 9915  
 Gly Thr Val Leu Ile Thr Gly Gly Thr Gly Thr Leu Gly Ala Leu  
 9920 9925 9930  
 Phe Ala Glu His Leu Val Ser Ala His Gly Val Arg His Leu Leu  
 9935 9940 9945  
 Leu Thr Ser Arg Arg Gly Pro Gln Ala His Gly Ala Thr Asp Leu  
 9950 9955 9960  
 Gln Gln Arg Leu Thr Asp Leu Gly Ala His Val Thr Ile Thr Ala  
 9965 9970 9975  
 Cys Asp Ile Ser Asp Pro Glu Ala Leu Ala Ala Leu Val Asn Ser  
 9980 9985 9990  
 Val Pro Thr Gln His Arg Leu Thr Ala Val Val His Thr Ala Ala  
 9995 10000 10005  
 Val Leu Ala Asp Thr Pro Val Thr Glu Leu Thr Gly Asp Gln Leu  
 10010 10015 10020  
 Asp Gln Val Leu Ala Pro Lys Ile Asp Ala Ala Trp Gln Leu His

10025

10030

10035

Gln Leu Thr Tyr Glu His Asn Leu Ser Ala Phe Ile Met Phe Ser  
 10040 10045 10050

Ser Met Ala Gly Met Ile Gly Ser Pro Gly Gln Gly Asn Tyr Ala  
 10055 10060 10065

Ala Ala Asn Thr Ala Leu Asp Ala Leu Ala Asp Tyr Arg His Arg  
 10070 10075 10080

Leu Gly Leu Pro Ala Thr Ser Leu Ala Trp Gly Tyr Trp Gln Thr  
 10085 10090 10095

His Thr Gly Leu Thr Ala His Leu Thr Asp Val Asp Leu Ala Arg  
 10100 10105 10110

Met Thr Arg Leu Gly Leu Met Pro Ile Ala Thr Ser His Gly Leu  
 10115 10120 10125

Ala Leu Phe Asp Ala Ala Leu Ala Thr Gly Gln Pro Val Ser Ile  
 10130 10135 10140

Pro Ala Pro Ile Asn Thr His Thr Leu Ala Arg His Ala Arg Asp  
 10145 10150 10155

Asn Thr Leu Ala Pro Ile Leu Ser Ala Leu Ile Thr Thr Pro Arg  
 10160 10165 10170

Arg Arg Ala Ala Ser Ala Ala Thr Asp Leu Ala Ala Arg Leu Asn  
 10175 10180 10185

Gly Leu Ser Pro Gln Gln Gln Gln Gln Thr Leu Ala Thr Leu Val  
 10190 10195 10200

Ala Ala Ala Thr Ala Thr Val Leu Gly His His Thr Pro Glu Ser  
 10205 10210 10215

Ile Ser Pro Ala Thr Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu  
 10220 10225 10230

Thr Ala Leu Glu Leu Arg Asn Thr Leu Thr His Asn Thr Gly Leu  
 10235 10240 10245

Asp Leu Pro Pro Thr Leu Ile Phe Asp His Pro Thr Pro His Ala

10250		10255		10260
Val Ala 10265	Glu His Leu Leu	Glu 10270	Gln Ile Pro Gly	Ile Gly Ala Leu 10275
Val Pro 10280	Ala Pro Val Val	Ile 10285	Ala Ala Gly Arg	Thr Glu Glu Pro 10290
Val Ala 10295	Val Val Gly Met	Ala 10300	Cys Arg Phe Pro	Gly Gly Val Ala 10305
Ser Ala 10310	Asp Gln Leu Trp	Asp 10315	Leu Val Ile Ala	Gly Arg Asp Val 10320
Val Gly 10325	Asn Phe Pro Ala	Asp 10330	Arg Gly Trp Asp	Val Glu Gly Leu 10335
Phe Asp 10340	Pro Asp Pro Asp	Ala 10345	Val Gly Lys Thr	Tyr Thr Arg Tyr 10350
Gly Ala 10355	Phe Leu Asp Asp	Ala 10360	Ala Gly Phe Asp	Ala Gly Phe Phe 10365
Gly Ile 10370	Ser Pro Arg Glu	Ala 10375	Arg Ala Met Asp	Pro Gln Gln Arg 10380
Leu Leu 10385	Leu Glu Val Cys	Trp 10390	Glu Ala Leu Glu	Thr Ala Gly Ile 10395
Pro Ala 10400	His Thr Leu Ala	Gly 10405	Thr Ser Thr Gly	Val Phe Ala Gly 10410
Ala Trp 10415	Ala Gln Ser Tyr	Gly 10420	Ala Thr Asn Ser	Asp Asp Ala Glu 10425
Gly Tyr 10430	Ala Met Thr Gly	Gly 10435	Ala Thr Ser Val	Met Ser Gly Arg 10440
Ile Ala 10445	Tyr Thr Leu Gly	Leu 10450	Glu Gly Pro Ala	Ile Thr Val Asp 10455
Thr Ala 10460	Cys Ser Ser Ser	Leu 10465	Val Ala Ile His	Leu Ala Cys Gln 10470
Ser Leu 10475	Arg Asn Asn Glu	Ser 10480	Gln Leu Ala Leu	Ala Gly Gly Val 10485

Thr Val 10490	Met Ser Thr Pro Ala 10495	Val Phe Thr Glu Phe 10500	Ser Arg Gln
Arg Gly 10505	Leu Ala Pro Asp Gly 10510	Arg Cys Lys Ala Phe 10515	Ala Ala Thr
Ala Asp 10520	Gly Thr Gly Phe Gly 10525	Glu Gly Ala Ala Val 10530	Leu Val Leu
Glu Arg 10535	Leu Ser Glu Ala Arg 10540	Arg Asn Asn His Pro 10545	Val Leu Ala
Ile Val 10550	Ala Gly Ser Ala Ile 10555	Asn Gln Asp Gly Ala 10560	Ser Asn Gly
Leu Thr 10565	Ala Pro His Gly Pro 10570	Ser Gln Gln Arg Val 10575	Ile Asn Gln
Ala Leu 10580	Ala Asn Ala Gly Leu 10585	Thr His Asp Gln Val 10590	Asp Ala Val
Glu Ala 10595	His Gly Thr Gly Thr 10600	Thr Leu Gly Asp Pro 10605	Ile Glu Ala
Ser Ala 10610	Leu His Ala Thr Tyr 10615	Gly His His His Thr 10620	Pro Asp Gln
Pro Leu 10625	Trp Leu Gly Ser Ile 10630	Lys Ser Asn Ile Gly 10635	His Thr Gln
Ala Ala 10640	Ala Gly Ala Ala Gly 10645	Val Val Lys Met Ile 10650	Gln Ala Ile
Thr His 10655	Ala Thr Leu Pro Ala 10660	Thr Leu His Val Asp 10665	Gln Pro Ser
Pro His 10670	Ile Asp Trp Ser Ser 10675	Gly Thr Val Arg Leu 10680	Leu Thr Glu
Pro Ile 10685	Gln Trp Pro Asn Thr 10690	Asp His Pro Arg Thr 10695	Ala Ala Val
Ser Ser 10700	Phe Gly Ile Ser Gly 10705	Thr Asn Ala His Leu 10710	Ile Leu Gln

Gln Pro 10715	Pro Thr Pro Asp Thr 10720	Thr Gln Thr Pro Asn 10725	Thr Thr Thr
Gly Ser 10730	Asp Pro Ala Val Gly 10735	Ser Asp Pro Ala Val 10740	Gly Val Leu
Val Trp 10745	Pro Leu Ser Ala Arg 10750	Ser Ala Pro Gly Leu 10755	Ser Ala Gln
Ala Ala 10760	Arg Leu Tyr Gln His 10765	Leu Ser Ala His Pro 10770	Asp Leu Asp
Pro Ile 10775	Asp Val Ala His Ser 10780	Leu Ala Thr Thr Arg 10785	Ser His His
Pro His 10790	Arg Ala Thr Ile Thr 10795	Thr Ser Ile Glu His 10800	His Ser Glu
Asn Asn 10805	His Asp Thr Thr Asp 10810	Ala Leu Ala Ala Leu 10815	His Ala Leu
Ala Asn 10820	Asn Gly Thr His Pro 10825	Leu Leu Ser Arg Gly 10830	Leu Leu Thr
Pro Gln 10835	Gly Pro Gly Lys Thr 10840	Val Phe Val Phe Pro 10845	Gly Gln Gly
Ser Gln 10850	Tyr Pro Gly Met Gly 10855	Ala Asp Leu Tyr Arg 10860	Gln Phe Pro
Val Phe 10865	Ala His Ala Leu Asp 10870	Ala Cys Asp Ala Ala 10875	Leu Gln Pro
Phe Thr 10880	Gly Trp Ser Val Leu 10885	Ala Val Leu His Asp 10890	Glu Pro Glu
Ala Pro 10895	Ser Leu Glu Arg Val 10900	Asp Val Val Gln Pro 10905	Val Leu Phe
Ser Val 10910	Met Val Ser Leu Ala 10915	Ala Leu Trp Arg Trp 10920	Ala Gly Ile
Thr Pro 10925	Asp Ala Val Ile Gly 10930	His Ser Gln Gly Glu 10935	Ile Ala Ala



Ala His 10940	Val Ala Gly Ala Leu 10945	Thr Leu Pro Glu Ala 10950	Ala Ala Val
Val Ala 10955	Leu Arg Ser Arg Val 10960	Leu Thr Asp Leu Ala 10965	Gly Ala Gly
Ala Met 10970	Ala Ser Val Leu Ser 10975	Pro Glu Glu Pro Leu 10980	Thr Gln Leu
Leu Ala 10985	Arg Trp Asp Gly Lys 10990	Ile Thr Val Ala Ala 10995	Val Asn Gly
Pro Ala 11000	Ser Ala Val Val Ser 11005	Gly Asp Thr Thr Ala 11010	Ile Thr Glu
Leu Leu 11015	Ile Thr Cys Glu His 11020	Glu Asn Ile Asp Ala 11025	Arg Ala Ile
Pro Val 11030	Asp Tyr Pro Ser His 11035	Ser Pro Tyr Met Glu 11040	His Ile Arg
His Gln 11045	Phe Leu Asp Glu Leu 11050	Pro Glu Leu Thr Pro 11055	Arg Pro Ser
Thr Ile 11060	Ala Met Tyr Ser Thr 11065	Val Asp Gly Glu Pro 11070	His Asp Thr
Ala Tyr 11075	Asp Thr Thr Thr Met 11080	Thr Ala Asp Tyr Trp 11085	Tyr Arg Asn
Ile Arg 11090	Asn Thr Val Arg Phe 11095	His Asp Thr Val Ala 11100	Ala Leu Leu
Gly Ala 11105	Gly Glu Gln Val Phe 11110	Leu Glu Leu Ser Pro 11115	His Pro Val
Leu Thr 11120	Gln Ala Ile Thr Asp 11125	Thr Val Glu Gln Ala 11130	Gly Gly Gly
Gly Ala 11135	Ala Val Pro Ala Leu 11140	Arg Lys Asp Arg Pro 11145	Asp Ala Val
Ala Phe 11150	Ala Ala Ala Leu Gly 11155	Gln Leu His Cys His 11160	Gly Ile Ser

Pro Ser	Trp Asn Val Leu Tyr	Cys Gln Ala Arg	Pro	Leu Thr Leu
11165	11170		11175	
Pro Thr	Tyr Ala Phe Gln His	Gln Arg Tyr Trp	Leu	Leu Pro Thr
11180	11185		11190	
Ala Gly	Asp Phe Ser Gly Ala	Asn Thr His Ala	Met	His Pro Leu
11195	11200		11205	
Leu Asp	Thr Ala Thr Glu Leu	Ala Glu Asn Arg	Gly	Trp Val Phe
11210	11215		11220	
Thr Gly	Arg Ile Ser Pro Arg	Thr Gln Pro Trp	Leu	Asn Glu His
11225	11230		11235	
Ala Val	Glu Ser Ala Val Leu	Phe Pro Gly Thr	Gly	Phe Val Glu
11240	11245		11250	
Leu Ala	Leu His Val Ala Asp	Arg Ala Gly Tyr	Ser	Ser Val Asn
11255	11260		11265	
Glu Leu	Ile Val His Thr Pro	Leu Leu Leu Ala	Gly	His Asp Thr
11270	11275		11280	
Ala Asp	Leu Gln Ile Thr Val	Thr Asp Thr Asp	Asp	Met Gly Arg
11285	11290		11295	
Gln Ser	Leu Asn Ile His Ser	Arg Pro His Ile	Gly	His Asp Asn
11300	11305		11310	
Thr Thr	Thr Gly Asp Glu Gln	Pro Glu Trp Val	Leu	His Ala Ser
11315	11320		11325	
Ala Val	Leu Thr Ala Gln Thr	Thr Asp His Asn	His	Leu Pro Leu
11330	11335		11340	
Thr Pro	Val Pro Trp Pro Pro	Pro Gly Thr Ala	Ala	Ile Glu Val
11345	11350		11355	
Asp Asp	Phe Tyr Asp Asp Leu	Ala Ala Gln Gly	Tyr	Asn Tyr Gly
11360	11365		11370	
Pro Thr	Phe Gln Gly Val Gln	Arg Ile Trp Arg	Asp	His Ala Thr
11375	11380		11385	
Pro Asp	Val Ile Tyr Ala Glu	Val Glu Leu Pro	Glu	Asp Thr Asp

11390		11395		11400
Ile Asp 11405	Gly Tyr Gly	Ile His 11410	Pro Ala Leu Phe	Asp Ala Ala Leu 11415
His Pro 11420	Leu Leu Ala Leu	Thr 11425	Gln Pro Pro Thr	Asn Asp Thr Asp 11430
Asp Thr 11435	Asn Thr Ala Asp	Thr 11440	Gly Asp Gln Val	Arg Leu Pro Tyr 11445
Ala Phe 11450	Thr Gly Ile Ser	Leu 11455	His Ala Thr His	Ala Thr Arg Leu 11460
Arg Val 11465	Arg Leu Thr Arg	Thr 11470	Gly Ala Asp Ala	Ile Thr Val His 11475
Thr Ser 11480	Asp Thr Thr Gly	Ala 11485	Pro Val Ala Ile	Ile Asp Ser Leu 11490
Ile Thr 11495	Arg Pro Leu Thr	Thr 11500	Ala Thr Gly Ser	Ala Pro Ala Thr 11505
Thr Ala 11510	Ala Gly Leu Leu	His 11515	Leu Ser Trp Pro	Pro His Pro Asp 11520
Thr Thr 11525	Thr Asp Thr Asp	Thr 11530	Asp Thr Asp Ala	Leu Arg Tyr Gln 11535
Val Ile 11540	Ala Glu Pro Thr	Gln 11545	Gln Leu Pro Arg	Tyr Leu His Asp 11550
Leu His 11555	Thr Ser Thr Asp	Leu 11560	His Thr Ser Thr	Thr Glu Ala Asp 11565
Val Val 11570	Val Trp Pro Val	Pro 11575	Val Pro Ser Asn	Glu Glu Leu Gln 11580
Ala His 11585	Gln Ala Ser Asp	Thr 11590	Ala Val Ser Ser	Arg Ile His Thr 11595
Leu Thr 11600	Arg Gln Thr Leu	Thr 11605	Val Val Gln Asp	Trp Leu Thr His 11610
Pro Asp 11615	Thr Thr Gly Thr	Arg 11620	Leu Val Ile Val	Thr Arg His Gly 11625

Val Ser	Thr Ser	Ala His	Asp	Pro Val	Pro Asp	Leu	Ala His	Ala
11630			11635			11640		
Ala Val	Trp Gly	Leu Ile	Arg	Ser Ala	Gln Asn	Glu	His Pro	Gly
11645			11650			11655		
Arg Phe	Thr Leu	Leu Asp	Thr	Asp Asp	Asn Thr	Asn	Ser Asp	Thr
11660			11665			11670		
Leu Thr	Thr Ala	Leu Thr	Leu	Pro Thr	Arg Glu	Asn	Gln Leu	Ala
11675			11680			11685		
Ile Arg	Arg Asp	Thr Ile	His	Ile Pro	Arg Leu	Thr	Arg His	Ser
11690			11695			11700		
Ser Asp	Gly Ala	Leu Thr	Ala	Pro Val	Val Val	Asp	Pro Glu	Gly
11705			11710			11715		
Thr Val	Leu Ile	Thr Gly	Gly	Thr Gly	Thr Leu	Gly	Ala Leu	Phe
11720			11725			11730		
Ala Glu	His Leu	Val Ser	Ala	His Gly	Val Arg	His	Leu Leu	Leu
11735			11740			11745		
Thr Ser	Arg Arg	Gly Pro	Gln	Ala His	Gly Ala	Thr	Asp Leu	Gln
11750			11755			11760		
Gln Arg	Leu Thr	Asp Leu	Gly	Ala His	Val Thr	Ile	Thr Ala	Cys
11765			11770			11775		
Asp Ile	Ser Asp	Pro Glu	Ala	Leu Ala	Ala Leu	Val	Asn Ser	Val
11780			11785			11790		
Pro Thr	Gln His	Arg Leu	Thr	Ala Val	Val His	Thr	Ala Ala	Val
11795			11800			11805		
Leu Ala	Asp Thr	Pro Val	Thr	Glu Leu	Thr Gly	Asp	Gln Leu	Asp
11810			11815			11820		
Gln Val	Leu Ala	Pro Lys	Ile	Asp Ala	Ala Trp	Gln	Leu His	Gln
11825			11830			11835		
Leu Thr	Tyr Glu	His Asn	Leu	Ser Ala	Phe Ile	Met	Phe Ser	Ser
11840			11845			11850		

Met	Ala	Gly	Met	Ile	Gly	Ser	Pro	Gly	Gln	Gly	Asn	Tyr	Ala	Ala
11855						11860					11865			
Ala	Asn	Thr	Ala	Leu	Asp	Ala	Leu	Ala	Asp	Tyr	Arg	His	Arg	Leu
11870						11875					11880			
Gly	Leu	Pro	Ala	Thr	Ser	Leu	Ala	Trp	Gly	Tyr	Trp	Gln	Thr	His
11885						11890					11895			
Thr	Gly	Leu	Thr	Ala	His	Leu	Thr	Asp	Val	Asp	Leu	Ala	Arg	Met
11900						11905					11910			
Thr	Arg	Leu	Gly	Leu	Met	Pro	Ile	Ala	Thr	Ser	His	Gly	Leu	Ala
11915						11920					11925			
Leu	Phe	Asp	Ala	Ala	Leu	Ala	Thr	Gly	Gln	Pro	Val	Ser	Ile	Pro
11930						11935					11940			
Ala	Pro	Ile	Asn	Thr	His	Thr	Leu	Ala	Arg	His	Ala	Arg	Asp	Asn
11945						11950					11955			
Thr	Leu	Ala	Pro	Ile	Leu	Ser	Ala	Leu	Ile	Thr	Thr	Pro	Arg	Arg
11960						11965					11970			
Arg	Ala	Ala	Ser	Ala	Ala	Thr	Asp	Leu	Ala	Ala	Arg	Leu	Asn	Gly
11975						11980					11985			
Leu	Ser	Pro	Gln	Gln	Gln	Gln	Gln	Thr	Leu	Ala	Thr	Leu	Val	Ala
11990						11995					12000			
Ala	Ala	Thr	Ala	Thr	Val	Leu	Gly	His	His	Thr	Pro	Glu	Ser	Ile
12005						12010					12015			
Ser	Pro	Ala	Thr	Ala	Phe	Lys	Asp	Leu	Gly	Ile	Asp	Ser	Leu	Thr
12020						12025					12030			
Ala	Leu	Glu	Leu	Arg	Asn	Thr	Leu	Thr	His	Asn	Thr	Gly	Leu	Asp
12035						12040					12045			
Leu	Pro	Pro	Thr	Leu	Ile	Phe	Asp	His	Pro	Thr	Pro	His	Ala	Val
12050						12055					12060			
Ala	Glu	His	Leu	Leu	Glu	Gln	Ile	Pro	Gly	Ile	Gly	Ala	Leu	Val
12065						12070					12075			

Pro Ala 12080	Pro Val Val Ile 12085	Ala Gly Arg Thr Glu 12090	Glu Pro Val
Ala Val 12095	Val Gly Met Ala Cys 12100	Arg Phe Pro Gly Gly 12105	Val Ala Ser
Ala Asp 12110	Gln Leu Trp Asp Leu 12115	Val Ile Ala Gly Arg 12120	Asp Val Val
Gly Asn 12125	Phe Pro Ala Asp Arg 12130	Gly Trp Asp Val Glu 12135	Gly Leu Phe
Asp Pro 12140	Asp Pro Asp Ala Val 12145	Gly Lys Thr Tyr Thr 12150	Arg Tyr Gly
Ala Phe 12155	Leu Asp Asp Ala Ala 12160	Gly Phe Asp Ala Gly 12165	Phe Phe Gly
Ile Ser 12170	Pro Arg Glu Ala Arg 12175	Ala Met Asp Pro Gln 12180	Gln Arg Leu
Leu Leu 12185	Glu Val Cys Trp Glu 12190	Ala Leu Glu Thr Ala 12195	Gly Ile Pro
Ala His 12200	Thr Leu Ala Gly Thr 12205	Ser Thr Gly Val Phe 12210	Ala Gly Ala
Trp Ala 12215	Gln Ser Tyr Gly Ala 12220	Thr Asn Ser Asp Asp 12225	Ala Glu Gly
Tyr Ala 12230	Met Thr Gly Gly Ala 12235	Thr Ser Val Met Ser 12240	Gly Arg Ile
Ala Tyr 12245	Thr Leu Gly Leu Glu 12250	Gly Pro Ala Ile Thr 12255	Val Asp Thr
Ala Cys 12260	Ser Ser Ser Leu Val 12265	Ala Ile His Leu Ala 12270	Cys Gln Ser
Leu Arg 12275	Asn Asn Glu Ser Gln 12280	Leu Ala Leu Ala Gly 12285	Gly Val Thr
Val Met 12290	Ser Thr Pro Ala Val 12295	Phe Thr Glu Phe Ser 12300	Arg Gln Arg

Gly Leu 12305	Ala Pro Asp Gly Arg 12310	Cys Lys Ala Phe Ala 12315	Ala Thr Ala
Asp Gly 12320	Thr Gly Phe Gly Glu 12325	Gly Ala Ala Val Leu 12330	Val Leu Glu
Arg Leu 12335	Ser Glu Ala Arg Arg 12340	Asn Asn His Pro Val 12345	Leu Ala Ile
Val Ala 12350	Gly Ser Ala Ile Asn 12355	Gln Asp Gly Ala Ser 12360	Asn Gly Leu
Thr Ala 12365	Pro His Gly Pro Ser 12370	Gln Gln Arg Val Ile 12375	Asn Gln Ala
Leu Ala 12380	Asn Ala Gly Leu Thr 12385	His Asp Gln Val Asp 12390	Ala Val Glu
Ala His 12395	Gly Thr Gly Thr Thr 12400	Leu Gly Asp Pro Ile 12405	Glu Ala Ser
Ala Leu 12410	His Ala Thr Tyr Gly 12415	His His His Thr Pro 12420	Asp Gln Pro
Leu Trp 12425	Leu Gly Ser Ile Lys 12430	Ser Asn Ile Gly His 12435	Thr Gln Ala
Ala Ala 12440	Gly Ala Ala Gly Val 12445	Val Lys Met Ile Gln 12450	Ala Ile Thr
His Ala 12455	Thr Leu Pro Ala Thr 12460	Leu His Val Asp Gln 12465	Pro Ser Pro
His Ile 12470	Asp Trp Ser Ser Gly 12475	Thr Val Arg Leu Leu 12480	Thr Glu Pro
Ile Gln 12485	Trp Pro Asn Thr Asp 12490	His Pro Arg Thr Ala 12495	Ala Val Ser
Ser Phe 12500	Gly Ile Ser Gly Thr 12505	Asn Ala His Leu Ile 12510	Leu Gln Gln
Pro Pro 12515	Thr Pro Asp Thr Thr 12520	Gln Thr Pro Asn Thr 12525	Thr Thr Gly
Ser Asp	Pro Ala Val Gly Ser	Asp Pro Ala Val Gly	Val Leu Val

12530

12535

12540

Trp Pro Leu Ser Ala Arg Ser Ala Pro Gly Leu Ser Ala Gln Ala  
 12545 12550 12555

Ala Arg Leu Tyr Gln His Leu Ser Ala His Pro Asp Leu Asp Pro  
 12560 12565 12570

Ile Asp Val Ala His Ser Leu Ala Thr Thr Arg Ser His His Pro  
 12575 12580 12585

His Arg Ala Thr Ile Thr Thr Ser Ile Glu His His Ser Glu Asn  
 12590 12595 12600

Asn His Asp Thr Thr Asp Ala Leu Ala Ala Leu His Ala Leu Ala  
 12605 12610 12615

Asn Asn Gly Thr His Pro Leu Leu Ser Arg Gly Leu Leu Thr Pro  
 12620 12625 12630

Gln Gly Pro Gly Lys Thr Val Phe Val Phe Pro Gly Gln Gly Ser  
 12635 12640 12645

Gln Tyr Pro Gly Met Gly Ala Asp Leu Tyr Arg Gln Phe Pro Val  
 12650 12655 12660

Phe Ala His Ala Leu Asp Glu Val Ala Ala Ala Leu Asn Pro His  
 12665 12670 12675

Leu Asp Val Ala Leu Leu Glu Val Met Phe Ser Gln Gln Asp Thr  
 12680 12685 12690

Ala Met Ala Gln Leu Leu Asp Gln Thr Phe Tyr Ala Gln Pro Ala  
 12695 12700 12705

Leu Phe Ala Leu Gly Thr Ala Leu His Arg Leu Phe Thr His Ala  
 12710 12715 12720

Gly Ile His Pro Asp Tyr Leu Leu Gly His Ser Ile Gly Glu Leu  
 12725 12730 12735

Thr Ala Ala Tyr Ala Ala Gly Val Leu Ser Leu Gln Asp Ala Ala  
 12740 12745 12750

Thr Leu Val Thr Ser Arg Gly Arg Leu Met Gln Ser Cys Thr Pro  
 12755 12760 12765



Gly Gly	Thr Met	Leu Ala	Leu	Gln Ala	Ser Glu	Ala	Glu Val	Gln
12770			12775			12780		
Pro Leu	Leu Glu	Gly Leu	Asp	His Ala	Val Ser	Ile	Ala Ala	Ile
12785			12790			12795		
Asn Gly	Ala Thr	Ser Ile	Val	Leu Ser	Gly Asp	His	Asp Ser	Leu
12800			12805			12810		
Glu Gln	Ile Gly	Glu His	Phe	Ile Thr	Gln Asp	Arg	Arg Thr	Thr
12815			12820			12825		
Arg Leu	Gln Val	Ser His	Ala	Phe His	Ser Pro	His	Met Asp	Pro
12830			12835			12840		
Ile Leu	Glu Gln	Phe Arg	Gln	Ile Ala	Ala Gln	Leu	Thr Phe	Ser
12845			12850			12855		
Ala Pro	Thr Leu	Pro Ile	Leu	Ser Asn	Leu Thr	Gly	Gln Ile	Ala
12860			12865			12870		
Arg His	Asp Gln	Leu Ala	Ser	Pro Asp	Tyr Trp	Thr	Gln Gln	Leu
12875			12880			12885		
Arg Asn	Thr Val	Arg Phe	His	Asp Thr	Val Ala	Ala	Leu Leu	Gly
12890			12895			12900		
Ala Gly	Glu Gln	Val Phe	Leu	Glu Leu	Ser Pro	His	Pro Val	Leu
12905			12910			12915		
Thr Gln	Ala Ile	Thr Asp	Thr	Val Glu	Gln Ala	Gly	Gly Gly	Gly
12920			12925			12930		
Ala Ala	Val Pro	Ala Leu	Arg	Lys Asp	Arg Pro	Asp	Ala Val	Ala
12935			12940			12945		
Phe Ala	Ala Ala	Leu Gly	Gln	Leu His	Cys His	Gly	Ile Ser	Pro
12950			12955			12960		
Ser Trp	Asn Val	Leu Tyr	Cys	Gln Ala	Arg Pro	Leu	Thr Leu	Pro
12965			12970			12975		
Thr Tyr	Ala Phe	Gln His	Gln	Arg Tyr	Trp Leu	Leu	Pro Thr	Ala
12980			12985			12990		

Gly Asp 12995	Phe Ser Gly Ala Asn 13000	Thr His Ala Met His 13005	Pro Leu Leu
Asp Thr 13010	Ala Thr Glu Leu Ala 13015	Glu Asn Arg Gly Trp 13020	Val Phe Thr
Gly Arg 13025	Ile Ser Pro Arg Thr 13030	Gln Pro Trp Leu Asn 13035	Glu His Ala
Val Glu 13040	Ser Ala Val Leu Phe 13045	Pro Gly Thr Gly Phe 13050	Val Glu Leu
Ala Leu 13055	His Val Ala Asp Arg 13060	Ala Gly Tyr Ser Ser 13065	Val Asn Glu
Leu Ile 13070	Val His Thr Pro Leu 13075	Leu Leu Ala Gly His 13080	Asp Thr Ala
Asp Leu 13085	Gln Ile Thr Val Thr 13090	Asp Thr Asp Asp Met 13095	Gly Arg Gln
Ser Leu 13100	Asn Ile His Ser Arg 13105	Pro His Ile Gly His 13110	Asp Asn Thr
Thr Thr 13115	Gly Asp Glu Gln Pro 13120	Glu Trp Val Leu His 13125	Ala Ser Ala
Val Leu 13130	Thr Ala Gln Thr Thr 13135	Asp His Asn His Leu 13140	Pro Leu Thr
Pro Val 13145	Pro Trp Pro Pro Pro 13150	Gly Thr Ala Ala Ile 13155	Glu Val Asp
Asp Phe 13160	Tyr Asp Asp Leu Ala 13165	Ala Gln Gly Tyr Asn 13170	Tyr Gly Pro
Thr Phe 13175	Gln Gly Val Gln Arg 13180	Ile Trp Arg Asp His 13185	Ala Thr Pro
Asp Val 13190	Ile Tyr Ala Glu Val 13195	Glu Leu Pro Glu Asp 13200	Thr Asp Ile
Asp Gly 13205	Tyr Gly Ile His Pro 13210	Ala Leu Phe Asp Ala 13215	Ala Leu His

Pro Leu 13220	Leu Ala Leu Thr 13225	Gln 13225	Pro Pro Thr Asn Asp 13230	Thr Asp Asp
Thr Asn 13235	Thr Ala Asp Thr 13240	Gly 13240	Asp Gln Val Arg Leu 13245	Pro Tyr Ala
Phe Thr 13250	Gly Ile Ser Leu His 13255	Ala Thr His Ala Thr 13260	Arg Leu Arg	
Val Arg 13265	Leu Thr Arg Thr 13270	Gly 13270	Ala Asp Ala Ile Thr 13275	Val His Thr
Ser Asp 13280	Thr Thr Gly Ala Pro 13285	Val Ala Ile Ile Asp 13290	Ser Leu Ile	
Thr Arg 13295	Pro Leu Thr Thr Ala 13300	Thr Gly Ser Ala Pro 13305	Ala Thr Thr	
Ala Ala 13310	Gly Leu Leu His Leu 13315	Ser Trp Pro Pro His 13320	Pro Asp Thr	
Thr Thr 13325	Asp Thr Asp Thr Asp 13330	Thr Asp Ala Leu Arg 13335	Tyr Gln Val	
Ile Ala 13340	Glu Pro Thr Gln Gln 13345	Leu Pro Arg Tyr Leu 13350	His Asp Leu	
His Thr 13355	Ser Thr Asp Leu His 13360	Thr Ser Thr Thr Glu 13365	Ala Asp Val	
Val Val 13370	Trp Pro Val Pro Val 13375	Pro Ser Asn Glu Glu 13380	Leu Gln Ala	
His Gln 13385	Ala Ser Asp Thr Ala 13390	Val Ser Ser Arg Ile 13395	His Thr Leu	
Thr Arg 13400	Gln Thr Leu Thr Val 13405	Val Gln Asp Trp Leu 13410	Thr His Pro	
Asp Thr 13415	Thr Gly Thr Arg Leu 13420	Val Ile Val Thr Arg 13425	His Gly Val	
Ser Thr 13430	Ser Ala His Asp Pro 13435	Val Pro Asp Leu Ala 13440	His Ala Ala	

Val	Trp	Gly	Leu	Ile	Arg	Ser	Ala	Gln	Asn	Glu	His	Pro	Gly	Arg
13445						13450					13455			
Phe	Thr	Leu	Leu	Asp	Thr	Asp	Asp	Asn	Thr	Asn	Ser	Asp	Thr	Leu
13460						13465					13470			
Thr	Thr	Ala	Leu	Thr	Leu	Pro	Thr	Arg	Glu	Asn	Gln	Leu	Ala	Ile
13475						13480					13485			
Arg	Arg	Asp	Thr	Ile	His	Ile	Pro	Arg	Leu	Thr	Arg	His	Ser	Ser
13490						13495					13500			
Asp	Gly	Ala	Leu	Thr	Ala	Pro	Val	Val	Val	Asp	Pro	Glu	Gly	Thr
13505						13510					13515			
Val	Leu	Ile	Thr	Gly	Gly	Thr	Gly	Thr	Leu	Gly	Ala	Leu	Phe	Ala
13520						13525					13530			
Glu	His	Leu	Val	Ser	Ala	His	Gly	Val	Arg	His	Leu	Leu	Leu	Thr
13535						13540					13545			
Ser	Arg	Arg	Gly	Pro	Gln	Ala	His	Gly	Ala	Thr	Asp	Leu	Gln	Gln
13550						13555					13560			
Arg	Leu	Thr	Asp	Leu	Gly	Ala	His	Val	Thr	Ile	Thr	Ala	Cys	Asp
13565						13570					13575			
Ile	Ser	Asp	Pro	Glu	Ala	Leu	Ala	Ala	Leu	Val	Asn	Ser	Val	Pro
13580						13585					13590			
Thr	Gln	His	Arg	Leu	Thr	Ala	Val	Val	His	Thr	Ala	Ala	Val	Leu
13595						13600					13605			
Ala	Asp	Thr	Pro	Val	Thr	Glu	Leu	Thr	Gly	Asp	Gln	Leu	Asp	Gln
13610						13615					13620			
Val	Leu	Ala	Pro	Lys	Ile	Asp	Ala	Ala	Trp	Gln	Leu	His	Gln	Leu
13625						13630					13635			
Thr	Tyr	Glu	His	Asn	Leu	Ser	Ala	Phe	Ile	Met	Phe	Ser	Ser	Met
13640						13645					13650			
Ala	Gly	Met	Ile	Gly	Ser	Pro	Gly	Gln	Gly	Asn	Tyr	Ala	Ala	Ala
13655						13660					13665			
Asn	Thr	Ala	Leu	Asp	Ala	Leu	Ala	Asp	Tyr	Arg	His	Arg	Leu	Gly

13670		13675		13680
Leu Pro 13685	Ala Thr Ser	Leu Ala 13690	Trp Gly Tyr Trp	Gln Thr His Thr 13695
Gly Leu 13700	Thr Ala His	Leu Thr 13705	Asp Val Asp	Leu Ala Arg Met Thr 13710
Arg Leu 13715	Gly Leu Met	Pro Ile 13720	Ala Thr Ser His	Gly Leu Ala Leu 13725
Phe Asp 13730	Ala Ala Leu	Ala Thr 13735	Gly Gln Pro Val	Ser Ile Pro Ala 13740
Pro Ile 13745	Asn Thr His	Thr Leu 13750	Ala Arg His Ala	Arg Asp Asn Thr 13755
Leu Ala 13760	Pro Ile Leu	Ser Ala 13765	Leu Ile Thr Thr	Pro Arg Arg Arg 13770
Ala Ala 13775	Ser Ala Ala	Thr Asp 13780	Leu Ala Ala Arg	Leu Asn Gly Leu 13785
Ser Pro 13790	Gln Gln Gln	Gln Gln 13795	Thr Leu Ala Thr	Leu Val Ala Ala 13800
Ala Thr 13805	Ala Thr Val	Leu Gly 13810	His His Thr Pro	Glu Ser Ile Ser 13815
Pro Ala 13820	Thr Ala Phe	Lys Asp 13825	Leu Gly Ile Asp	Ser Leu Thr Ala 13830
Leu Glu 13835	Leu Arg Asn	Thr Leu 13840	Thr His Asn Thr	Gly Leu Asp Leu 13845
Pro Pro 13850	Thr Leu Ile	Phe Asp 13855	His Pro Thr Pro	His Ala Leu Thr 13860
Gln His 13865	Leu His Thr	Arg Leu 13870	Thr Gln Ser His	Thr Pro Val Gly 13875
Pro Ile 13880	Ala Ser Leu	Leu Ser 13885	His Ala Ile Asp	Glu Gly Lys Phe 13890
Arg Ala	Gly Ala Asp	Leu Leu	Met Ala Ala Ser	Asn Leu Asn Gln

13895		13900		13905	
Ser Phe 13910	Ser Asn Met Ala Glu 13915	Leu Asn Gln Leu Pro 13920	Ala Val Thr		
Asp Ile 13925	Ala Asp Ala Ser Pro 13930	Asp Gly Leu Leu Thr 13935	Leu Ile Cys		
Ile Ser 13940	Thr Ser Glu Asn Glu 13945	Tyr Ala Arg Leu Ala 13950	Ala Ala Asn		
Ile His 13955	Ser Leu Thr Phe Ala 13960	Glu Ile Ala Ala Pro 13965	Gly Phe Tyr		
Asp Ala 13970	Gln Leu Pro Asn Ser 13975	Ile Glu Thr Ser Ala 13980	Glu Ala Leu		
Ala Thr 13985	Ala Ile Thr Gly Ala 13990	Tyr Ala Asn Thr Ser 13995	Ile Val Leu		
Val Ala 14000	His Ser Ile Val Cys 14005	Glu Leu Ala Gln Ala 14010	Thr Met Thr		
Arg Leu 14015	Gln Asp Ala Asp Ile 14020	Asp Leu Val Gly Leu 14025	Val Leu Leu		
Asp Pro 14030	Leu Glu Gly Thr Asn 14035	Ser Thr Glu Asp Tyr 14040	Val Glu Thr		
Val Leu 14045	Thr Arg Ile Glu His 14050	Ile Asn Ala Pro Arg 14055	Val Gly Val		
Asp Gly 14060	Tyr Leu Ala Ala Leu 14065	Gly Arg Tyr Leu Gln 14070	Phe His Glu		
Asp Arg 14075	Arg Ile Pro Ile Pro 14080	Glu Thr Arg His Met 14085	Thr Leu His		
Ser Asp 14090	Thr Lys Ile Asp Arg 14095	Ala Gln Thr Pro Met 14100	Asn Leu Leu		
Gln Asp 14105	Glu Ala Ala Leu Thr 14110	Ala Leu Lys Ile Gly 14115	Asn Trp Met		
Asn Asp 14120	Val Gly Val Ala Leu 14125	Ser Val Asn Leu Glu 14130			

<210> 10  
<211> 328  
<212> PRT  
<213> Mycobacterium ulcerans

<220>  
<223> Amino acid sequence of the protein encoded by mup045 gene.

<400> 10

Val Ile Trp Asn Asp Ile Tyr Ile Ser Gly Thr Gly Arg Phe Ile Pro  
1 5 10 15

Ser Met Arg Pro Ile Asn Asp Ile Gln Val Asp Gly Val Pro Asn Asp  
20 25 30

His Thr Ile Val Gln Ser Asp Tyr Ile Ser Phe Thr Glu Ala Asp Glu  
35 40 45

Pro Ala Thr Val Met Ala Thr Arg Ala Ala Thr Glu Ala Leu Thr Thr  
50 55 60

Ser Glu Leu Val Ser Ala Asp Val Gly Val Leu Ile Tyr Ala Ala Ile  
65 70 75 80

Ile Gly Asp Ala His His Phe Ala Pro Val Cys His Val Gln Arg Val  
85 90 95

Leu Arg Ala Pro Asp Ala Leu Ala Phe Glu Leu Ser Ala Ala Ser Asn  
100 105 110

Gly Gly Thr Gln Gly Ile Ala Val Ala Ala Asn Leu Met Thr Ala Asp  
115 120 125

Ala Ser Val Lys Ala Ala Leu Val Cys Thr Ala Tyr Arg His Pro Ile  
130 135 140

Asp Ile Ile Ser Arg Trp Ser Ser Gly Met Val Phe Gly Asp Gly Ala  
145 150 155 160

Ala Ala Ala Val Leu Ser Arg Asp Gly Gly Met Val Arg Leu Ile Ser  
165 170 175

Gly Tyr His Gly Ser Leu Pro Glu Leu Glu Val Leu Ala Arg Asn Arg  
180 185 190

Ser Asn Glu Arg Leu Gly Phe Val Leu Pro Asp Val Gly Leu Gly Lys

195

200

205

Tyr Leu Thr Ala Ile Ala Arg Met Tyr Gln Ala Val Ile Ala Gln Val  
210 215 220

Leu Glu Glu Ala Gln Thr Ser Ile Ala Glu Ile Asp Tyr Phe Gly Leu  
225 230 235 240

Ile Gly Ile Gly Ile Pro Ser Leu Thr Ala Thr Ile Leu Glu Pro Asn  
245 250 255

Gly Ile Pro Val Asn Lys Thr Ser Trp Gly Leu Leu Arg Gln Met Gly  
260 265 270

His Val Gly Ala Cys Asp Pro Leu Leu Ser Leu Asn His Leu Phe Glu  
275 280 285

Gln Asn Val Leu Lys Arg Gly Asp Lys Val Leu Leu Leu Gly Gly Gly  
290 295 300

Val Gly Tyr Arg Leu Thr Cys Ile Val Ala Glu Ile Ala Met Asn Pro  
305 310 315 320

Gly Val Pro Gly His Ser Thr Ser  
325

&lt;210&gt; 11

&lt;211&gt; 437

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium ulcerans

&lt;220&gt;

&lt;223&gt; Amino acid sequence of the protein encoded by mup053 gene.

&lt;400&gt; 11

Val Arg Gln Arg Leu Asn Trp Ile Ala Ala His Gly Leu Leu Arg Gly  
1 5 10 15

Thr Ala Arg Leu Ala Ala Arg Leu Gly Asp Val Gln Ser Arg Leu Val  
20 25 30

Ala Asp Pro Met Val Met Ala Asn Pro Ala Pro Phe Cys Asp Glu Leu  
35 40 45

Arg Ala Ile Gly Pro Val Val Ser Ser Tyr Gly Thr His Leu Val Val  
50 55 60



Ser His Ala Ile Ala His Glu Leu Leu Arg Ser Glu Asp Phe Glu Val  
 65 70 75 80  
 Val Ser Leu Gly Ser Asn Leu Pro Ala Pro Met Arg Trp Leu Glu Arg  
 85 90 95  
 Arg Thr Arg Asp Asp Thr Pro His Leu Leu Leu Pro Pro Ser Leu Leu  
 100 105 110  
 Ala Val Glu Pro Pro Asn His Thr Arg Tyr Arg Lys Ala Val Ser Ser  
 115 120 125  
 Val Phe Thr Pro Lys Ala Val Ala Gly Leu Arg Asp His Val Glu Glu  
 130 135 140  
 Thr Ala Ser Ala Leu Leu Asp Gln Leu Thr Asp Gln Ala Ser Ala Val  
 145 150 155 160  
 Asp Ile Ile Ala Arg Tyr Cys Ser Gln Leu Pro Val Ala Val Ile Cys  
 165 170 175  
 Asp Ile Leu Gly Val Pro Ser Arg Asp Arg Asn Arg Val Leu Lys Phe  
 180 185 190  
 Gly Gln Leu Ala Gly Pro Cys Leu Asp Phe Gly Leu Thr Trp Arg Gln  
 195 200 205  
 His Gln Gln Val Arg Gln Gly Leu Gln Gly Leu His Phe Trp Ile Thr  
 210 215 220  
 Glu His Leu Glu Glu Leu Arg Ser Asn Pro Gly Asp Asp Leu Met Ser  
 225 230 235 240  
 Gln Met Ile His Ala Ser Glu Asn Gly Ser Ser Glu Thr His Leu His  
 245 250 255  
 Ala Thr Glu Val Arg Met Ile Gly Leu Val Leu Gly Ala Ser Phe Ala  
 260 265 270  
 Thr Thr Met Asp Leu Leu Gly Asn Gly Ile Gln Val Leu Leu Asp Ala  
 275 280 285  
 Pro Glu Leu Arg Asp Ala Leu Ser Gln Arg Pro Gln Leu Trp Pro Asn  
 290 295 300

Ala Val Glu Glu Ile Leu Arg Leu Glu Pro Pro Val Gln Leu Ala Gly  
305 310 315 320

Arg Met Ala Arg Lys Asp Thr Glu Val Ala Gly Thr Ala Ile Lys Arg  
325 330 335

Gly Gln Leu Val Ala Ile Tyr Leu Gly Ala Val Asn Arg Asp Pro Ser  
340 345 350

Val Phe Ala Asp Pro His Arg Phe Asp Ile Thr Arg Ala Asn Ala Asn  
355 360 365

Arg His Leu Ala Phe Ser Gly Gly Arg His Phe Cys Leu Gly Ala Ala  
370 375 380

Leu Ala Arg Val Glu Gly Glu Val Gly Leu Arg Met Leu Phe Glu Arg  
385 390 395 400

Phe Pro Asp Val Arg Ala Ala Gly Pro Gly Asn Arg Arg Asp Thr Arg  
405 410 415

Thr Leu Arg Gly Trp Ser Gln Leu Pro Val Gln Leu Gly Ala Ala Arg  
420 425 430

Ser Met Ala Ile Arg  
435

<210> 12

<211> 301

<212> PRT

<213> Mycobacterium ulcerans

<220>

<223> Amino acid sequence of the protein encoded by mup038 gene.

<400> 12

Met Ile Val Trp Pro Glu Val Val Ser Thr Val Val Asp Val Asp Gly  
1 5 10 15

Val Ala Met Ser Ala Leu Val Ala Glu Pro Asp Gln Glu Pro Lys Ala  
20 25 30

Val Ile Leu Ala Leu His Gly Gly Ala Thr Asn Ala Arg Tyr Phe Asp  
35 40 45

Cys Pro Gly His Arg Ala Leu Ser Leu Leu His Thr Gly Ala Ala Ala  
50 55 60

Gly Phe Thr Val Val Ala Leu Asp Arg Pro Gly Tyr Gly Ser Ser Ala  
65 70 75 80

Gly Asp Pro Asp Ala Met Asn Arg Pro His Gln Arg Ala Ala Leu Ala  
85 90 95

Tyr Gly Ala Leu Asp Arg Ile Leu Ala Gln Arg Pro Arg Gly Ala Gly  
100 105 110

Val Phe Ile Met Gly His Ser Asn Gly Cys Glu Leu Ala Met Trp Met  
115 120 125

Ala Thr Glu Thr Arg Gly Ala Glu Leu Leu Gly Ile Glu Leu Ala Gly  
130 135 140

Thr Gly Trp His Tyr Gln Pro Glu Ala Arg Glu Ile Leu Thr Thr Ala  
145 150 155 160

Thr Gly Glu His Arg Trp Val Gly Leu Tyr Asp Leu Leu Trp His Pro  
165 170 175

Gln Arg Leu Tyr Pro Pro Glu Val Leu Asn Ala Ala Ile Ile Ser Ser  
180 185 190

Ser Ala Pro Ala Tyr Glu Glu Gln Met Met Ala Asp Trp Thr Arg Arg  
195 200 205

Thr Phe Leu Glu Leu Val Pro Ala Val Arg Val Pro Val His Phe Ser  
210 215 220

Ile Ala Gln His Glu Lys Val Trp Gln Arg Asp Ser Ser Ala Leu Asp  
225 230 235 240

Glu Ile Ala Val Leu Phe Ser Gly Ala Pro Arg Phe Ile Leu His Glu  
245 250 255

Gln Pro Glu Ala Gly His Asn Ile Ser Leu Gly His Thr Ala Gly Asp  
260 265 270

Tyr His Thr Thr Val Leu Ser Phe Val Gln Gln Cys Leu Ala Glu Arg  
275 280 285

Leu Ala Asn Ala Gln Gln Asp Val Asp Leu Ala Ala Glu  
290 295 300